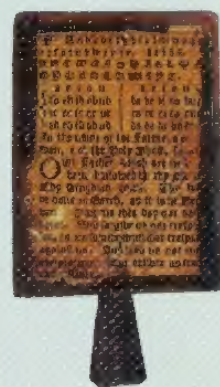
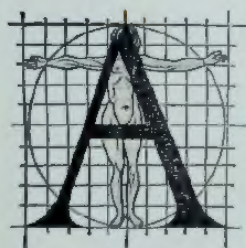



EYEWITNESS BOOKS

BOOK

Discover the story of language and the written word –
from ancient picture alphabets to medieval
manuscripts and printed books





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UNIVERSITY OF MICHIGAN

BOOK

1968

1968

1968

1968

1968

1968

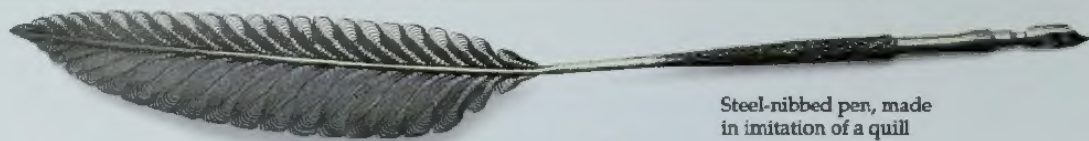
1968



EYEWITNESS BOOKS

BOOK





Steel-ribbed pen, made
in imitation of a quill



Chinese
calligraphy
brushes



Chinese writing ink



Wax crayons



Early
20th-century
typewriter

Selection of
steel pen
nibs



Ancient
Roman
pens and
stylus



Mesopotamian cylinder
seal and impression



18th-century traveling
writing box



EYEWITNESS BOOKS

BOOK

Written by
KAREN BROOKFIELD

Photographed by
LAURENCE PORDES



17th-century
inkpot and
quill pens



16th-century book bound for King Henry VIII



Medieval
ink well



ALFRED A. KNOPF • NEW YORK



A DORLING KINDERSLEY BOOK

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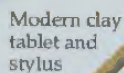
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Tray containing metal printing type

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What is writing?

BEFORE THE DEVELOPMENT OF WRITING, people kept all their information in their heads. But it is difficult for human beings to remember everything and to pass it on accurately to someone else. Writing is a way of storing information and passing it on to other people who are some distance away in space or time. Writing was not invented by one person or even one society, but it evolved naturally in different places at different times from the need to keep accounts or to record events. It takes many forms, from simple picture writing to stylized scripts representing the sounds of a language, and it is found on every kind of material, from paper to pottery. Today, writing is an essential part of our everyday lives, not least in books like this one.



KEEPING TRACK

From the very beginning, writing was important for keeping records so that people were not dependent on memory alone. On this tablet from Mesopotamia, a simple drawing of an animal and a mark for a number told everyone how many animals there were.



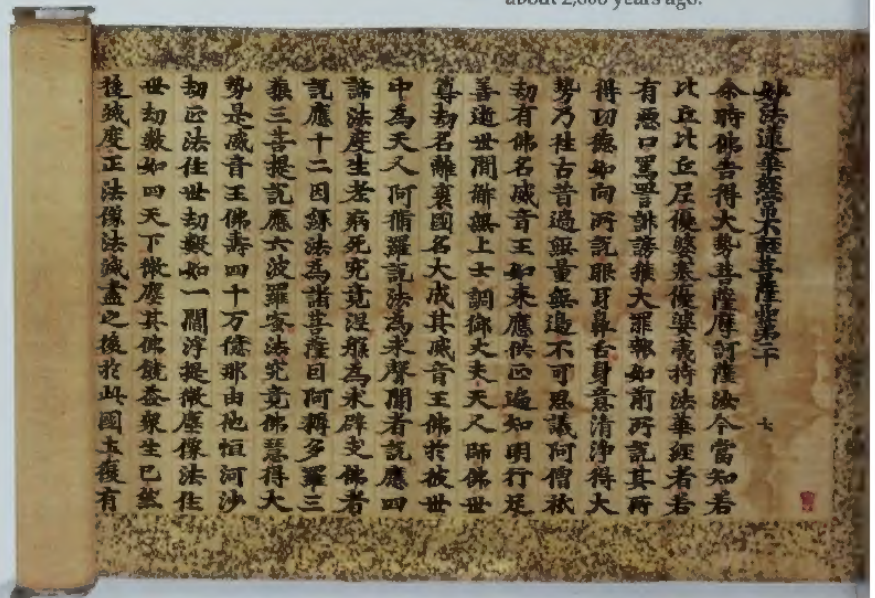
MARKER

Writing has always been used to mark property and land, letting people know who the owner was. This terra-cotta marker is inscribed in a script called Oscan, which was used in Italy between the fourth and first centuries B.C.



LONG-LASTING

Before paper was invented, all sorts of writing materials were used. Pottery was readily available and cheap and lasted a long time. This piece has on it the text of part of a play by the ancient Greek dramatist Euripides written down about 2,000 years ago.



WHAT IS A BOOK?

In China and Japan, many written texts take the form of a roll like this one. The Chinese script is written in vertical columns starting at the top right-hand corner. In the West, books have a totally different form, and the writing goes from left to right in horizontal lines.

Text written legibly

خدا با عبادي غريب و غرضه عاليقدر بنده
نواز غنچه پير در حضور مژگن خاوند
سحر کار و اکثر چنين صحن بهياد

A PICTURE FOR READING
Writing does not always have to have a practical purpose. Calligraphy, the art of beautiful writing, is highly valued in the Far East and the Islamic world. Islamic calligraphers are skilled at stretching the long lines of Arabic letters into animal shapes like this horse. The whole horse is made up of an Arabic text, which is also written out underneath in the normal script from right to left.

BRaille

This modern form of writing, invented by Louis Braille (1809-1852), has a special purpose. By feeling the raised pattern of dots with their fingertips, people who are blind or visually impaired can read texts written on a special Braille typewriter.



MADE TO LAST

Carving letters in stone is a slow and deliberate form of writing used by the ancient Greeks and Romans for monuments and tombstones. The tradition is kept alive today by craftspeople who carve inscriptions on foundation stones and memorials for important people and events.



PROFESSIONAL WRITER

Until the 20th century many people did not learn to write and did not need to in their everyday lives. In some societies writing was deliberately restricted to just a special group of trained scribes. In others public letter writers, like this 19th-century Egyptian scribe, wrote letters for people who could not write themselves.



PAVING THE WAY
TOWARD A NEW

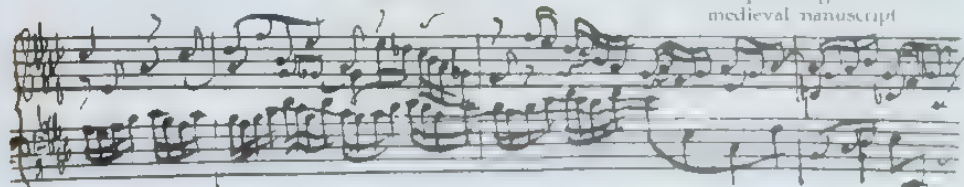
THE FINEST OF US

PALLIO MAJORA CANAMUS

On omnes arbusta juvant humilesque myrtae,
Sic aenomis silvas, silvas sunt cornale dignas
Ultima curvae venit jam carminis aetas,
Magna ab integro saeculorum nascitur ordo
Am rodas et Virgo, redeunt Saturnia regna,
Iam nova progenies coelo demittitur alto
Tu modo nascenti puero qui ferrea primum
Destitit acroto surget gens aurea mundo,
Casta, fides, Lucina tuas jam regnat Apollo
Teque adeo decus hoc aevi, te consule unbit
Pollio et incipient magni procedere menses,
Te dabo, si qua manent, solaris vestigia nostrae
Irrita perperna solent formidine terras

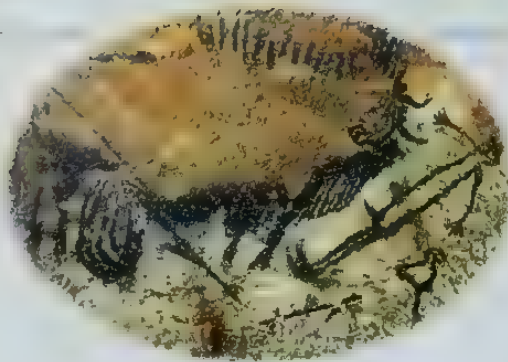
IN THE TRADITION

Modern western calligraphers revive the traditional letter forms of the Middle Ages, when all books had to be written by hand. William Grailly Hewitt (1864-1905) laid out and decorated this poem by the Roman poet Virgil as if it were a medieval manuscript.



NOTE TAKING

Music is a language in its own right and a special set of symbols is needed for writing it down. Since the 17th century, western music has been written in this kind of notation. It means that trained musicians throughout the world can read, understand, and perform this piece as intended by the composer, J.S. Bach (1685-1750).



HUNTER'S QUARRY

Some prehistoric peoples made beautiful paintings of animals, people, and abstract patterns on the walls of caves. These may represent creatures killed in the hunt and so could be a very early form of picture writing.



CHIEF'S JOURNEY

This North American rock inscription tells how a chief called Myengun went on a journey using five canoes. The trip took three days (three suns under a curved sky). The eagle is a symbol of courage, and the other creatures represent animal spirits that protected the chief on his journey.

First signs

THE EARLIEST FORMS OF WRITING consist of sets of pictures of people, animals, and everyday objects. These are called pictograms, and the oldest known date from around 3000 B.C. To read this kind of writing you do not necessarily have to speak the same language as the person who wrote the pictograms – you just have to recognize the symbols. But it is easy to misunderstand a message or story. To record and pass on more complex information, societies developed ideograms, symbols that represent abstract ideas. For example, a picture of a pair of legs walking can mean "to go," or a starry sky can mean "night," "dark," or "black." The symbol may change its shape and look less like the real object it was based on, but it will still keep the same meaning.



BAD BOY'S SCROLL

Native North American peoples, such as the Ojibwa from the area around the Great Lakes, produced scrolls in which traditional stories were told in pictograms. This one belonged to a chief called Bad Boy.



Indus seal

MYSTERIOUS SCRIPT

left and right
The Indus people of northern India and Pakistan developed a writing system more than 4,000 years ago, but today we still cannot decipher it.

There seem to be up to 400 different signs, which are used in inscriptions on seals like this one. The signs are mostly pictograms, but some are probably the names of people and places.



Bull

Signs

SEAL OF OWNERSHIP below

In ancient Mesopotamia (modern Iraq) people marked their property with cylindrical seals which they rolled along on wet clay to leave an impression. The pattern on a person's seal was like a signature. Seals were also used by traders because they were a quick and easy way to authorize contracts. Mesopotamian writing, on the other hand, was complex and was practiced mainly by specially trained scribes.

Impression

Goat



Mesopotamian seal made of gypsum



Doors of a shrine

Impression

Snake

Snake

Sheep

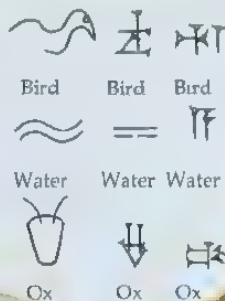
SMALL TABLET

This tablet shows a very early example of Mesopotamian writing, from at least 4,000 years ago. It may have been used for keeping accounts, because it has a pictogram of an animal with a number above it.



CUNEIFORM

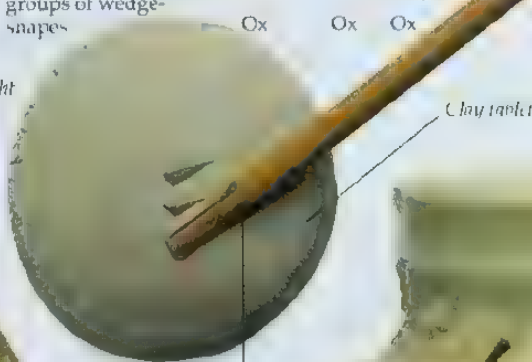
The Sumerians of Mesopotamia probably invented cuneiform over 5,000 years ago. After a time their pictograms were written side-ways and gradually simplified until they became groups of wedge-shapes.



These drawings of cuneiform signs show how they developed from pictograms to stylized symbols

TABLET AND STYLUS *right*

The ancient peoples of the Middle East used a reed stylus to write on soft clay tablets. The way they cut the end of the reed determined the shape of the mark it made. When the clay tablets dried out in the sun, they became hard and preserved the writing.



Clay tablet

Square-ended stylus makes triangular-shaped mark

TERRA-COTTA VASE

At first there were about 2,000 cuneiform signs, but later the number was reduced to about 800, of which only 200-300 were in constant use. They also changed from being written in columns to being written in a line

and reading from left to right. The writing on this terra cotta vase tells of a long-running border dispute between the cities of Lagash and Umma over 4,000 years ago

AN ADAPTABLE SCRIPT

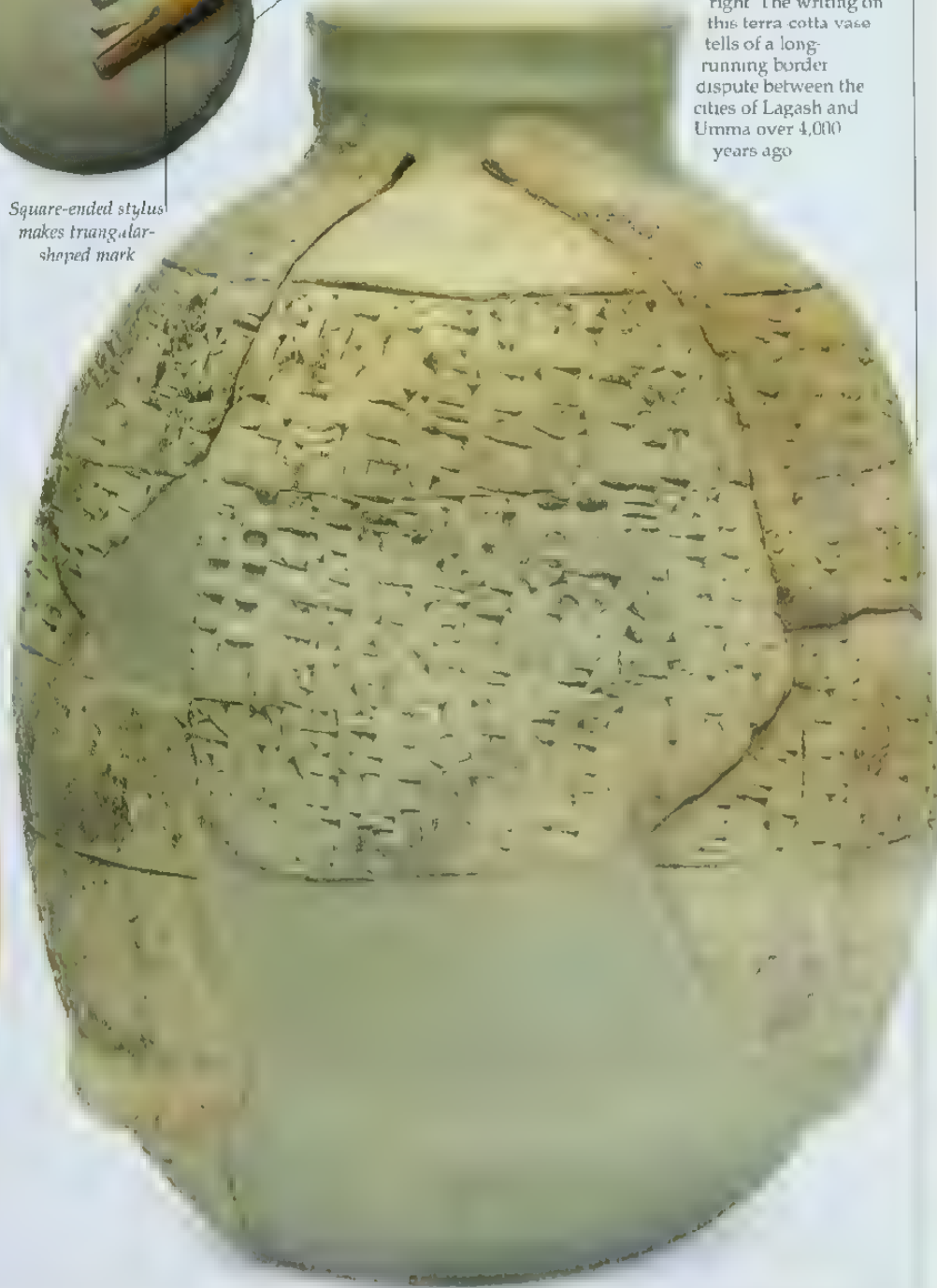
Cuneiform was an adaptable form of writing used by different peoples for different languages. The signs could be arranged in different ways to write languages such as Akkadian, Old Persian, and Elamite, as well as the Sumerian text shown here.

Sign for beer



STOCK IN TRADE

On this tablet the pictogram for beer is an upright jug with a pointed base. In general, it was difficult to draw curves with a reed stylus on clay so the signs developed into wedges or triangles with short, straight sides. Cuneiform gets its name from the Latin word *cuneus*, which means "a wedge".





CANG JIE

A Chinese legend says that writing was invented by Cang Jie, an official of the mythical Yellow Emperor, over 4,000 years ago. He created the script after looking at the patterns in tracks left on the ground by birds and animals.

Writing with signs

WHILE EASTERN MEDITERRANEAN people were developing hieroglyphs and cuneiform script, the Chinese were creating a writing system of their own. The Chinese way of writing is a complex combination of pictograms, ideograms, and signs that indicate sounds. In all, there are over 50,000 signs – but fortunately for Chinese children and foreigners learning Chinese, you need only a few thousand for everyday life. Because the system used in China has

changed very little during the 4,000 years of its existence, Chinese people today can read ancient texts without too much difficulty. The writing of some other ancient civilizations is still a mystery to us, despite scholars' efforts to decipher the texts that survive. It can take years of painstaking work to crack the code of a system that might at first glance look like simple picture writing.

子 子

Old Child Modern

木 木

Old Tree Modern

OLD AND NEW
The original pictogram can still be recognized in some of the modern Chinese characters.

電 影

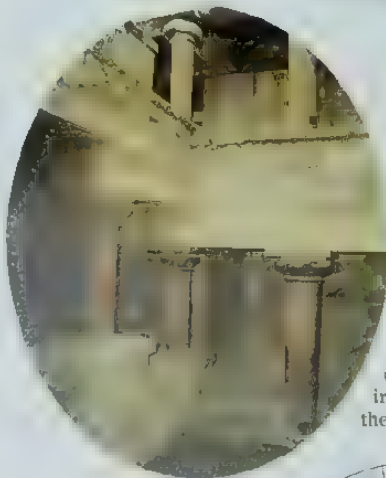
Electric + shadow = Movie

MODERN IDEAS
Any new idea needs a new Chinese character – often a combination of existing characters



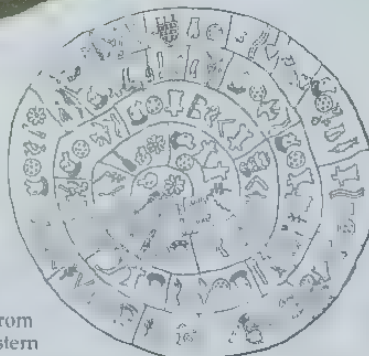
LINEAR B

The inhabitants of the island of Crete used three different writing systems over 3,000 years ago. Only the most highly developed one, known as Linear B, has been deciphered. It consists of ideograms, numbers, and signs for the syllables of the Greek language.



PHAISTOS DISK

Although this clay disk was found at Phaistos on Crete, the writing is not related to Linear B. The pictograms are similar to some ancient hieroglyphs, but no other writing like this has ever been found. It is probably brought back from a trading voyage to the eastern Mediterranean.



KNOSSOS

The Cretan scripts were unknown until archaeologists began excavations on Crete in the early 20th century. The clay tablets with Linear B inscriptions were found at the great palace at Knossos.



MICHAEL VENTRIS

Linear B was deciphered in the 1950s by a young Englishman named Michael Ventris. He devoted all his spare time from his job as an architect to showing how the script was used to write an early form of Greek.



BRUSHWORK

The Chinese calligrapher makes graceful flowing strokes with a brush made of animal hair tied together with a silk thread. It is held in a hollow bamboo tube. Chinese children have to spend a lot of time copying characters before they can write quickly and accurately.

PRACTICE

MAKES PERFECT
Chinese characters are made up of as many as 26 different strokes which must be written in the correct order. This character, called Yong, which means "eternal," is the model character for practicing the five basic strokes. A famous calligrapher called Wang Xizhi is said to have spent 15 years perfecting his Yong.

First stroke
Second stroke
Third stroke
Ancient characters
Fourth stroke
Fifth stroke

Black ink

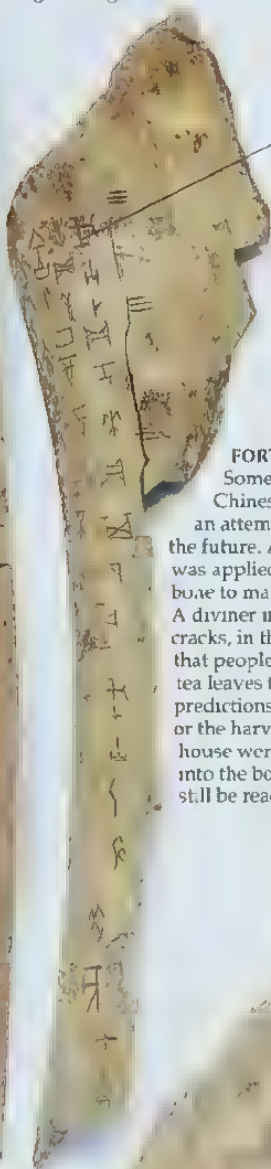
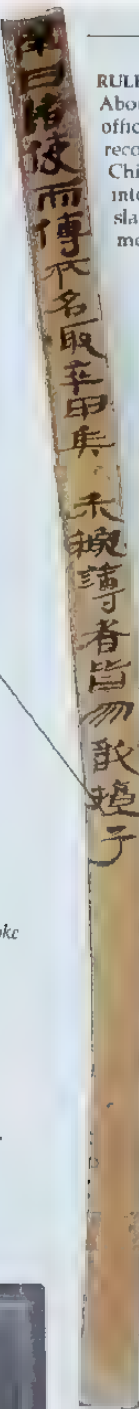


THE RIGHT MIXTURE

Calligraphy is a highly valued art form in China and the right materials are all-important. Calligraphers mix their own ink by rubbing the solid ink stick into a few drops of water on the ink stone.

RULES AND REGULATIONS

About 2,000 years ago, Chinese government officials used wooden slats like this one to keep records. The characters look different from modern Chinese ones but can still be read. They are cut into the wood with a stylus or knife. This wooden slat shows which grade of soldier could carry messages and grain.



Characters carved into the bone

FORTUNE-TELLING

Some of the earliest Chinese writing is an attempt to predict the future. A heated poker was applied to an animal bone to make it crack. A diviner interpreted the cracks, in the same way that people read tea leaves today. The predictions about rainfall or the harvest or moving house were then carved into the bone, which can still be read today.



ONE PEOPLE, TWO SCRIPTS

The Hittites, from parts of modern Turkey and Syria, used two scripts - Babylonian cuneiform and their own pictograms. Before their culture died out they also developed signs for some of the sounds of their language.



MAYANS

The Mayans, who lived in Central America from 500 B.C. to A.D. 1200, developed two styles of writing for use on different materials. One was for carving in stone or jade; the other for writing on bark or deer skin. Their signs are pictograms inside squares or ovals.

PREFERRED MATERIALS

The best writing materials are those that are cheap, easily available and do not need any special preparation. At first the Chinese wrote on wood, bamboo and animal bones like this one. Later they used lengths of silk and paper which they rolled up into scrolls.

Solid carbon stick

Egyptian writing

THE EGYPTIANS DEVELOPED a form of writing with pictures about 5,000 years ago. It came to be called hieroglyphs, from the Greek words meaning "sacred carvings," because it was used in temples, tombs, and other state monuments. At first sight, hieroglyphs look like simple pictograms, because they include many birds, parts of the body, and everyday objects. But they developed into a complex system where one hieroglyph can stand for a whole word in the Egyptian language or for just one sound. This makes some hieroglyphs similar to the letters of an alphabet. Writing hieroglyphs was slow, so gradually a faster form of the script, called hieratic, evolved, and later an even faster one, called demotic. At the end of the Egyptian civilization the Greeks ruled Egypt, so scribes had to master writing in a different way, with the letters of the Greek alphabet.

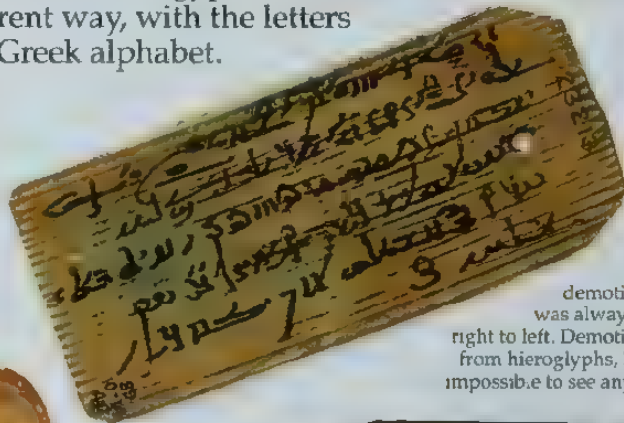
ROSETTA STONE

We would not be able to read hieroglyphs were it not for this stone. It is a thank-you to a ruler of Egypt with the text in three different scripts: Greek, demotic, and hieroglyphs. A Frenchman, Jean-François Champollion, deciphered the hieroglyphs by matching royal names in all three scripts and working out from his knowledge of Greek what the other symbols meant.

THE PROFESSIONALS

Writing in Egypt was practiced by highly trained professional scribes. They were rewarded well for this by having a very important position in society and special privileges, such as freedom from taxes. This scribe sits in the traditional position for writing.

Papyrus roll



MUMMY I.D.

This wooden label was attached to a mummy to identify it. The writing is in demotic script, which was always written from right to left. Demotic is descended from hieroglyphs, but it is almost impossible to see any resemblance.

Inkwell half filled with black ink



TOOLS OF THE TRADE

Scribes kept their brushes and pens in wooden cases, which they could carry around with them in case they had to travel. The black ink they used was made from charcoal or soot, and the colored inks - red, green, and blue - from minerals that were crushed and mixed with water.

RULERS' NAMES

The names of kings and queens were always enclosed in oval borders when written in hieroglyphs. This made a symbol called a cartouche



Hieratic text

Cartouche

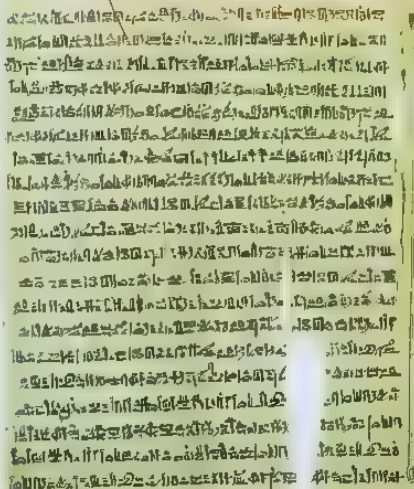
Hieroglyph



DUCK DOODLE

Student scribes practiced drawing hieroglyphs on bits of pottery or stone called ostraca which were cheaper than papyrus because they did not have to be specially prepared. Even once the young scribes were trained and skilled, they still had fun doodling in their spare time with some of the very elaborate hieroglyphs. This duckling was the word for "prime minister."

Hieroglyphs on temple walls could be carved directly into the stone, like this jackal



FROM HIEROGLYPH TO HIERATIC

Scribes needed a faster form of writing than hieroglyphs for letters and business contracts. The complex animals, birds, and objects were simplified into more abstract shapes in a flowing script called hieratic, which was always written from right to left. On this papyrus, hieratic is used for the main text on the left and hieroglyphs are used above the picture of a high priest making an offering to the god Osiris.



Eagle



Reed



Arm



Double reed



Chick



Leg



Shutter



Snail



Owl



Water



Man



Bird

COMMON HIEROGLYPHS

Hieroglyphs could stand for a sound as well as a whole word. For example, the mouth hieroglyph stood for the "m" sound and the symbol for a reed stood for the sound "n".

REED PENS

For writing on papyrus scrolls scribes used thin reed brushes or reed pens. The reed is cut and split at the end to hold the ink. The reed pen was introduced to Egypt by the Greeks. Hieroglyphs on temple walls or statues were written with thick brushes made from papyrus twine.



ABC...

THE ALPHABET IS A DIFFERENT way of writing from pictograms or ideograms. One letter represents a sound in a language, and the letters are combined to make words. Today more people throughout the world use alphabets than any other form of writing. The alphabet is probably also the quickest and most efficient way to write. You need only 26 letters to write all the words in the English language. This makes the alphabet far easier to learn than 800 cuneiform signs or several thousand Chinese characters. We do not know exactly how or when the first alphabet developed, but it was probably invented by people living in Syria and Palestine around 3,600 years ago. The idea was passed on by traders, and different peoples developed alphabets for their own languages. Eventually this led to an extended family of alphabets, including the Greek, the Cyrillic, and the Roman, which is used for all the languages of western Europe today.

MESSAGE OF THE SPHINX

The earliest ancestors of the alphabet we use are Semitic alphabets developed by peoples on the eastern shores of the Mediterranean. These people probably knew about the other forms of writing used in the surrounding countries, but the alphabet seems to have been their own invention. They developed letters for all the consonant sounds in their languages but left out the vowel sounds. These would be filled in by the person reading the text. This earliest alphabet from 3,600 years ago is inscribed in one of these early Semitic alphabets.

Inscription of the name of the goddess Ba'alat



THE FIRST ABC

The people of Ugarit (in modern Syria) developed an alphabet to record the sounds of their language and used the cuneiform script to write it down. The alphabet has 30 letters and a special sign to divide one word from the next. Excavations at Ugarit in 1929 unearthed examples of the writing from over 3,000 years ago, including this tablet which is the oldest known ABC in the world.

PHOENICIAN WRITING below

The Phoenicians came from what is now Syria and Lebanon and were great sailors and traders. Their alphabet had 22 letters, and like other early alphabets from the same Semitic origins it left out the vowel sounds of the language. It influenced the development of other alphabets in the countries where the Phoenicians traded.

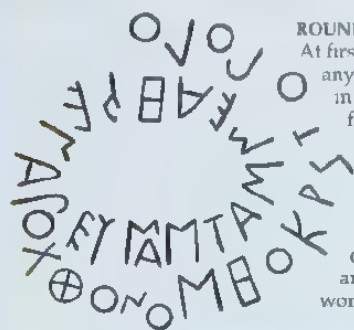


GREEK ALPHABET

The Greeks learned the art of writing from the Phoenicians with whom they traded, probably about 2,800 years ago. They refined the shape of some of the Phoenician letters, changed some of the Phoenician consonants into vowels to suit their own language, and added extra letters for sounds that the Phoenician language did not have.

ΑΣΚΛΗ
ΠΙΩ
ΚΑΙ
ΥΓΕΙΑ
ΤΥΧΗ
ΕΥΧΑΡΙ
ΣΤΗΡΙΟΝ

Inscribed letters



ROUND AND ROUND

At first the Greeks wrote in almost any direction—even in a spiral, as in this inscription. The letter forms here are closer to the Phoenician than later Greek, and the writing is read from the outside toward the center. As the alphabet developed, the Greeks settled on writing from left to right and introduced spaces between words, as well as punctuation.

ΑΝΕΟΗΚΕΤΟΝΝΑΟΝ
ΨΝΑΙΗΓΟΛΙΑΔΙ

TEMPLE INSCRIPTION

This Greek writing comes from a temple at Priene. The letters were finely carved in stone, with many strokes ending in short decorative cross lines that are known as serifs.

ETRUSCAN COIN

Around 700 B.C. the Greeks took their alphabet to Italy, where it was adopted and changed by the Etruscans. Short Etruscan inscriptions have been found on mirrors and other objects, such as coins, like this one made of gold.



ΑΓΟΝΩΜ

MENFRA

WADVT

TURAN

ETRUSCAN WRITING

Etruscan was written from right to left. We can read it because many of the letters are similar to ours, but we do not know what all the words mean.

וְכִיד חֵיל מֶלֶךְ בְּכָל הָעֵלִים
מֵעַלֵיכֶם: וְהִנֵּנִי מַעֲזוֹה נָא
יְהוָה וְהַשְׁבֵּתִים אֶל הָעִיר
הַזֹּאת וְנִלְחַמּוּ עֲלֶיהָ וְלָכְזוּ
וְשָׂרְפָהּ בְּאֵשׁ וְאֵת עֲרֵי

SQUARE HEBREW

This script has been in use for nearly 2,400 years with little change. The letters are written in an imaginary rectangular frame, which makes them very even. A system for adding vowels, as dots and dashes above or below the line, was developed when ancient Hebrew became extinct as a spoken language and it was feared that no one would know how to pronounce it properly with just the consonants.

ROMAN WRITER
Scribes were essential to keep the vast Roman Empire running smoothly but they did not have the high social status of scribes in Egypt or Mesopotamia. Many were slaves of Greek origin. The well-educated citizens of Rome could read and write in both Latin and Greek.



1015AMWVMD3XAB13B13DM301NAM

EARLY LATIN INSCRIPTION

At first Roman letters looked similar to Etruscan and Greek ones and were written from right to left, as on this very early Latin inscription. Gradually the shapes changed, some of the straight lines became curves, and the direction of writing was reversed.

WRITE ON

The Romans wrote on wooden tablets filled with wax, like the one this terracotta figure is holding. They also used ostraca (pp. 6-7) and papyrus (pp. 20-21). The papyrus had to be imported from Egypt, and they used so much that a shortage developed and new materials had to be found.

Reed pen

Flat end for erasing

PEN OR STYLUS?

As well as pens for writing on papyrus, the Romans used a metal stylus to inscribe their words into the soft wax of a tablet. When they no longer needed the writing, they rubbed it out with the flat end of the stylus and used the tablet again.

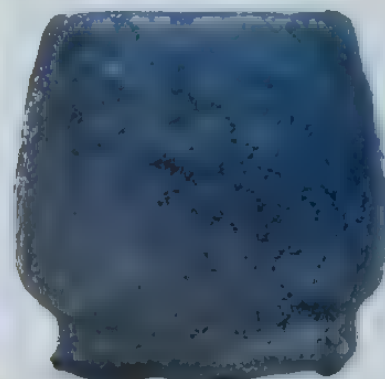
Pointed stylus

Bronze pen

Phoenician	Modern Hebrew	Early Greek	Classical Greek	Etruscan	Classical Roman	Modern Roman
𐤀	א	Α	Α	Α	A	A
𐤁	ב	Β	Β	Β	B	B
𐤂	ג	Γ	Γ	Γ	C	C
𐤃	ד	Δ	Δ	Δ	D	D
𐤄	ה	Ε	Ε	Ε	E	E
𐤅	ו	Ϝ		Ϝ	F	F
					G	G
𐤆	ז	Ζ	Ζ	Ζ		
𐤇	ח	Θ	Η	Θ	H	H
𐤈	ט	⊗	Θ	⊗		
𐤉	י	Ι	Ι	Ι	I	I
					J	J
𐤊	כ	Κ	Κ	Κ	K	K
𐤋	ל	Λ	Λ	Λ	L	L
𐤌	מ	Μ	Μ	Μ	M	M
𐤍	נ	Ν	Ν	Ν	N	N
𐤎	ס		Ξ	Ξ		
𐤏	ע	Ο	Ο	Ο	O	O
𐤐	פ	Π	Π	Π	P	P
𐤑	ק	Μ		Μ		
𐤒	ר	Φ		Ρ	Q	Q
𐤓	ש	Ϙ	Ρ	Ϙ	R	R
𐤔	ת	Σ	Σ	Σ	S	S
		Χ	Τ	Τ	T	T
					U	U
			Υ		V	V
					W	W
			Φ			
			Χ		X	X
			Ψ			
			Ω			
					Y	Y
					Z	Z

THE ALPHABET FAMILY

When the Romans conquered the Etruscans, they took over the Etruscan alphabet and adapted it to their own language. Some letters that the Etruscans had derived from the Greeks were not used, and new letters were added. The Roman alphabet is essentially the same today as it was 2,000 years ago.



INKS FOR WRITING
Like many other peoples, the Romans made their ink from soot mixed with water.



INK POTS
Roman writers kept their ink in clay or stone pots like these.

SQUARING UP

Carving in stone requires careful planning to make sure that all the words fit in and are properly spaced. Roman draftsmen used a square like this to keep the outlines straight.

MONUMENTAL LETTERS

In stone inscriptions the Romans used only capital letters, though they developed other styles for everyday writing. The carver first drew the inscription with chalk and then painted the letters with a brush. The sweep of the brush gave the letters their shape and made thick and thin strokes. The stone carver followed the same line when carving out the letters with an iron chisel.

Wreath of laurel leaves

Bronze stylus for writing

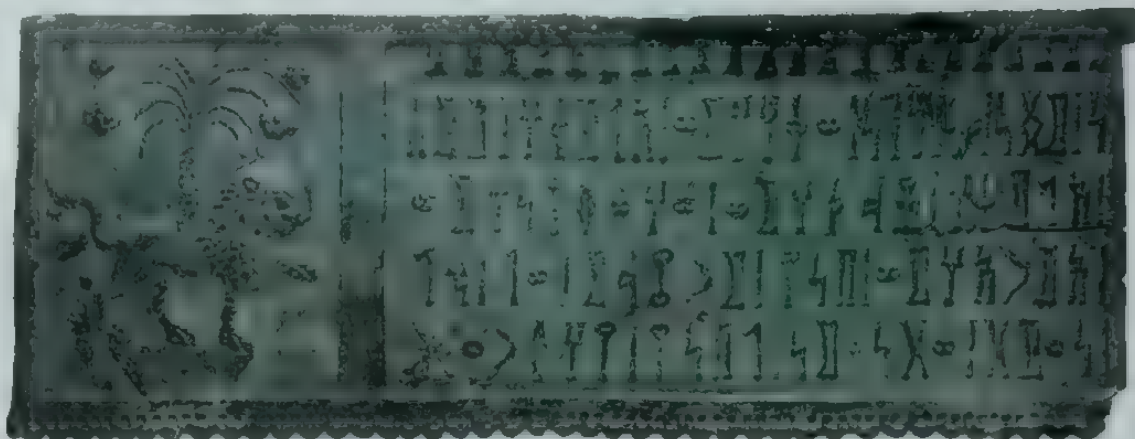
Carved letter M

Thick and thin strokes

COMPASS
Each letter fits inside an invisible square or circle so that the characters are uniform. The Romans used compasses to draw circles. Sometimes you can see the marks made by compasses in the centers of rounded letters.

ANCIENT SOUTH ARABIAN

This script was used in parts of the Middle East between 500 B.C. and A.D. 600, when it died out. Not many examples of it survive, but there are some monumental inscriptions and bronze tablets like this one. South Arabian script used 29 letters representing only consonants. One version of this script developed into classical Ethiopian and the modern Amharic scripts of Ethiopia.



Runic inscription

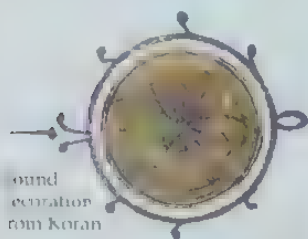


ANGULAR ALPHABET

Runes were used by Scandinavian and Germanic peoples between A.D. 200 and 1200. There were usually 24 letters in the alphabet, but the Anglo-Saxons, who used it in England, added extra letters for the sounds of their language. The angular characters have very few curves, probably because they were first carved in wood or bone, and carving curves would have been difficult. Runic inscriptions have been found on monuments, weapons, charms, and other objects such as this whalebone casket made in about A.D. 700.

ARABIC SCRIBES

These scribes wrote in Arabic script, which is written from right to left, and was probably first used in the late fourth century A.D. It became much more widespread with the proclamation of the Islamic faith three centuries later (pp. 34–35).



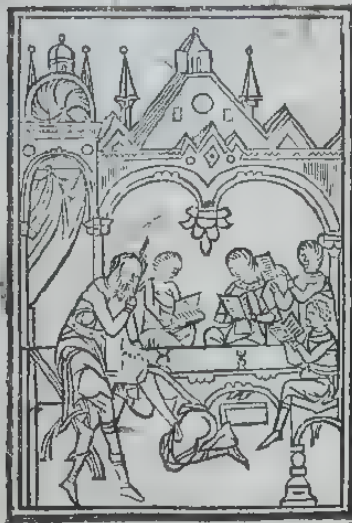
Sound extraction from Koran

ARABIC

Although the Roman, Hebrew, and Arabic scripts look very different, they can all be traced back to the same early developments in writing. Like Hebrew, Arabic started as a consonantal script – readers were expected to add the vowel sounds as they went along. Later on, vowels were indicated by extra marks above or below the letters.



ОУЧЕНИЦЕ



НИМАСЯ ОУЧЕНИЦЕ
ХИТРАЦИ РАЗУМѢТИ
БЖІВЕНІА ІУДАНІА
ЗАМАТВІА ПРІТГІАТИ
МІТРЕ, НВЕРХЪ СГІХ
ПВОНХЪ. ГИ ІСХ СЕ
БЖІН. ПОМНАДИ НАСЪ,
АМИНЬ.

А Б В Г Д Е Ж З

CHURCHMAN'S SCRIPT

The Cyrillic alphabet used in Russia is named after St. Cyril, a churchman who preached the Christian faith to the Slavic peoples. This book is a 17th-century textbook for an old form of the Russian language, Old Church Slavonic, printed in Cyrillic script. At the time there were no printed grammars of modern Russian, so language students used this book to learn Russian.



А	Д	И
Б	Е	Й
В	Ж	К
Г	З	
Д	И	
Е	Й	
Ж	К	
З	И	
И	Й	
Й	К	
К	И	
Л	М	Н
М	О	П
Н	Р	С
О	Т	У
П	Ф	Х
Р	Ц	
С		
Т		
У		
Ф		
Х		
Ц		

НИМАСЯ ОУЧЕНИЦЕ
ХИТРАЦИ РАЗУМѢТИ
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МІТРЕ, НВЕРХЪ СГІХ
ПВОНХЪ. ГИ ІСХ СЕ
БЖІН. ПОМНАДИ НАСЪ,
АМИНЬ.

HEAD OF THE PAGE

The heading of the page of the Old Church Slavonic textbook is written in a script called Viaz'. It developed from an old habit in manuscripts of writing the first line of a text in larger letters than the rest. The letters are joined and entwined to make a decorative pattern.

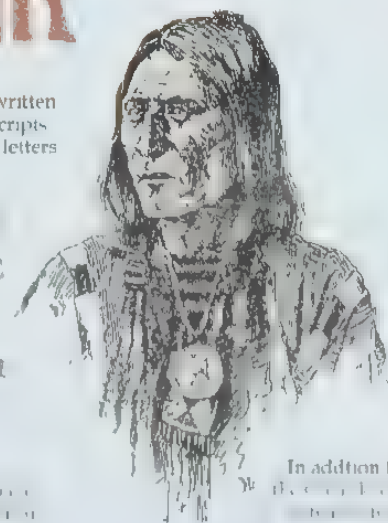
Д	Р	Т	Ѡ	Ѳ
З	Ѳ	У	А	Ј
Ѡ	Ѳ	А	Ѳ	Г
Ѳ	Ѳ	Р	Ѳ	М
Ѳ	Ѳ	И	Ѳ	У

INSTANT ALPHABETS

A number of scripts were invented in the 18th and 19th centuries that had not previously been written down. These included French and native North American languages. A Cherokee called Sequoyia invented this alphabet for his language between 1820 and 1824. Only some of the 85 letters in the alphabet are shown here.

WOODBLOCK DECORATION

The decorative panel at the top of the page was printed using a woodblock.



CYRILIC LETTERS

The original Cyrillic letters were based on the Greek uncial script of St. Cyril's time, the ninth century A.D. The Slavic peoples of Russia, Bulgaria, Serbia, and other countries took up the Cyrillic script.

In addition to the Cyrillic script, many other American peoples

such as the Creeks invented new alphabets.

Before paper

ONCE PEOPLE START TO KEEP written records of trade, agriculture, and major events, they need a constant supply of material to write on. They can use natural materials, such as wood, bamboo, or bone, but these are difficult to write on and are not practical. The ancient Egyptians found that they could make an excellent material for their documents from the papyrus plant. The knowledge of how to make papyrus sheets spread all over the ancient Mediterranean world. When the supply of papyrus began to run out, people looked for a substitute. The result was parchment, which was made from animal skins. Until paper reached the West in the Middle Ages, parchment was the most important writing material.

PLENTIFUL PAPYRUS

Papyrus for writing on is made from the stem of the papyrus plant. Once the ancient Egyptians had learned how to do this, they had a cheap and plentiful supply of material for all their written records. The earliest surviving papyrus is over 5,000 years old. The Egyptian state controlled the production and trade in papyrus, from which it made a lot of money.

Bushy top



Triangular stem

PLANTS WITH A PURPOSE

Papyrus grew in large plantations in the valley of the River Nile, but so many plants were needed for writing materials that eventually they became scarce. Papyrus was also wasteful because only one side could be written on.

LAYERING

After the stem has been cut from the papyrus plant, its green outer rind is removed and thin strips are cut from the white inner fibers. The strips are laid out side by side, edges overlapping.

Another layer is put on top across the first. The layers are pressed or hammered so that eventually they stick together with the plant's own moisture. When they have dried in the sun, the sheets can be written on.

Inner fibers

Green outer rind



LONG ROLLS

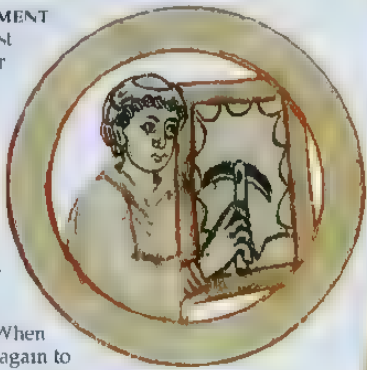
Scribes stuck sheets of papyrus together to form long rolls. This ancient Greek papyrus is nearly 13 ft (4 m) long. The text is written in narrow columns so that it can be read easily, one column at a time. Papyrus was an excellent material for rolls, but it was not good for a bound book because it tended to break up when the pages were turned many times.



Overlapping strips

PRODUCING PARCHMENT

The animal skin is first washed in clear water and then soaked in a solution of lime for up to 10 days. Both sides are then scraped to remove any remaining hair and flesh, and the skin is soaked again. It is then stretched on a wooden frame like this one and scraped with a curved knife. When it is dry, it is scraped again to make it as smooth as possible.



PARCHMENT FOR SALE

By the 15th century, scribes could buy rolls or sheets of parchment in shops like this. One man is trimming a skin into rectangles the shape of pages; the other is rubbing a sheet smooth with a stone.

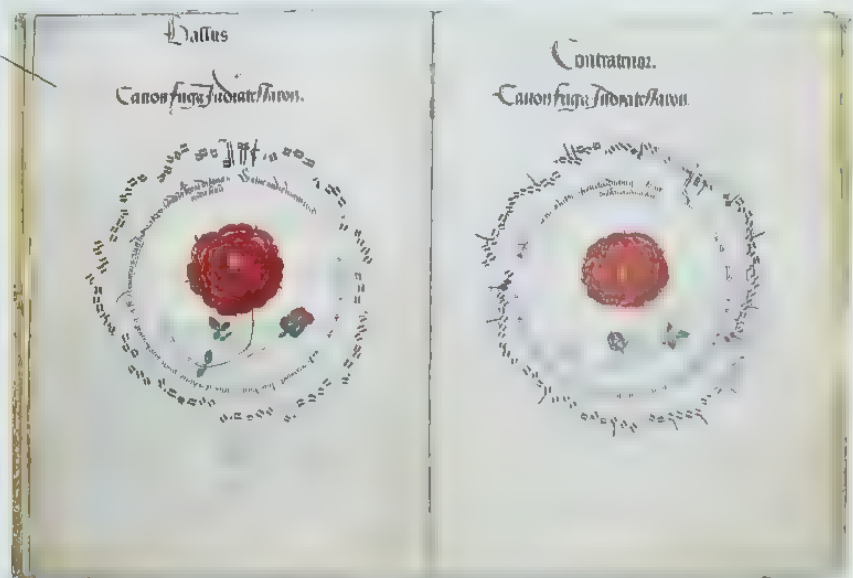
LEATHER GOODS

Parchment is an altogether different kind of material from papyrus. Like leather, it is the skin of an animal, usually a sheep, goat, or calf, but it is treated to make a soft, smooth surface for writing on. Legend says that parchment was invented by King Eumenes II of Pergamum (197–158 BC) because he could not get his usual supply of papyrus from Egypt, and the word parchment comes from Pergamum. It is more likely that the material developed gradually from the ways of tanning leather.



HEBREW SCROLL

Parchment can be folded or rolled and was therefore ideal for scrolls as well as for books in codex form like those we have today. It was the normal writing material in the West for about a thousand years, until paper became widely available. Even today important documents like certificates are sometimes written on parchment.



MUSIC FOR A KING

The two sides of a sheet of parchment are different. The side that was the hair side of the animal is darker and creamier than the side that was the flesh side. When the sheets are made into a book the facing pages always match. This book written on parchment contains music written in honor of King Henry VIII of England over 450 years ago. The words and music have been written around in a circle because it is to be sung in canon (as a round).

Paper

TRADITION SAYS that paper was invented in China by Cai Lun, an official of the Emperor He Di, in the year A. D. 105. The Chinese kept the process of making paper a secret for 700 years until Muslims invading Samarkand captured some Chinese prisoners who passed it on. Eventually the knowledge spread to Europe, and paper mills were set up wherever there was a good supply of water for making the pulp. The best paper is made from plants that have a lot of cellulose in their fibers, or from rags made from natural materials such as cotton or linen. The Chinese found paper cheaper to produce than silk and more convenient to use than bamboo or wood slats, especially for long books. In the West, paper replaced parchment as the most common writing material.



HIGH DEMAND

Once printing was established in Europe, the number of books produced increased enormously, and so did the demand for paper. In the 19th century, papermaking machines were invented. Cotton and linen rags were becoming scarce and expensive so wood was introduced as the new raw material for machine-made paper.

FLOWERY

Paper from southeast Asia sometimes has flowers and leaves pressed into it



MATERIALS FOR PAPER

The Chinese used mulberry bark or bamboo to make paper; the Europeans used linen and cotton rags. These were beaten in water to make a pulp

PAPER MOLD

The essential tool for making paper by hand is a mold for scooping up the soggy pulp. This Japanese mold is quite elaborate, with a hinged wooden frame to hold the mesh in place. The papermaker dips the mold in and out of the vat and gently shakes it to settle the pulp on the mesh. The clips are then opened and the mesh lifted out. A Western mold has fine wires instead of the bamboo mesh.

VATMAN

When the vatman puts the mold into the vat, the pulp collects on the mold and the liquid runs through leaving a thin layer of fibers

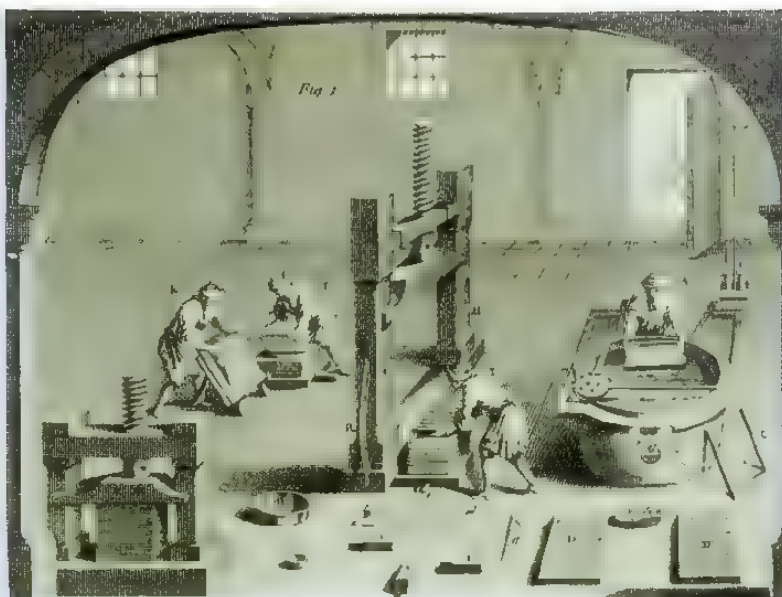
THE SQUEEZE

The fibers form a sheet of wet paper. The sheets are piled up and the water squeezed out with a boulder or with a press rather like a printing press



IN COLOR

Islamic papermakers were the first to dye, or color, their papers. They even speckled them with gold or silver. Nowadays paper comes in every color imaginable. Special paper like this might be used for a diploma or certificate.



PAPERMAKERS IN ACTION

After the rags have been beaten into a mushy pulp, the vatman dips the mold into the huge vat containing the pulp. He lifts out enough to make one sheet. The next worker places felt over the soggy sheet of paper to squeeze out the water and puts the sheets under the huge press. Two more people remove the felt when the paper is dry.

Handle to grip while dipping mold into pulp



Bamboo mesh

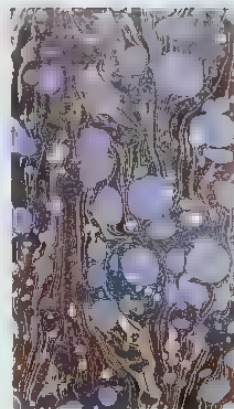
Clip to close mold



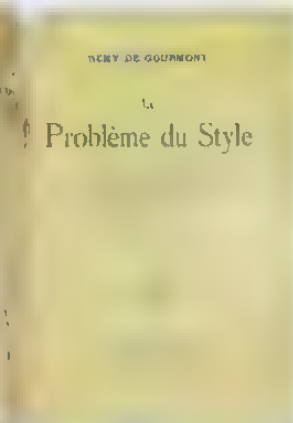
THE MARBLER'S BENCH

Marbling is done by dropping blobs of colored paint into a tray containing a mixture of water and a moss, dragging a comb across the surface to make the colors swirl in patterns, and then laying a sheet of paper on top to pick up these patterns.

THE MARBLER'S ART
The Chinese and the Persians knew how to marble paper hundreds of years ago. In the West marbled papers are often used for lining the inside covers of books.



Tattered, yellowing page



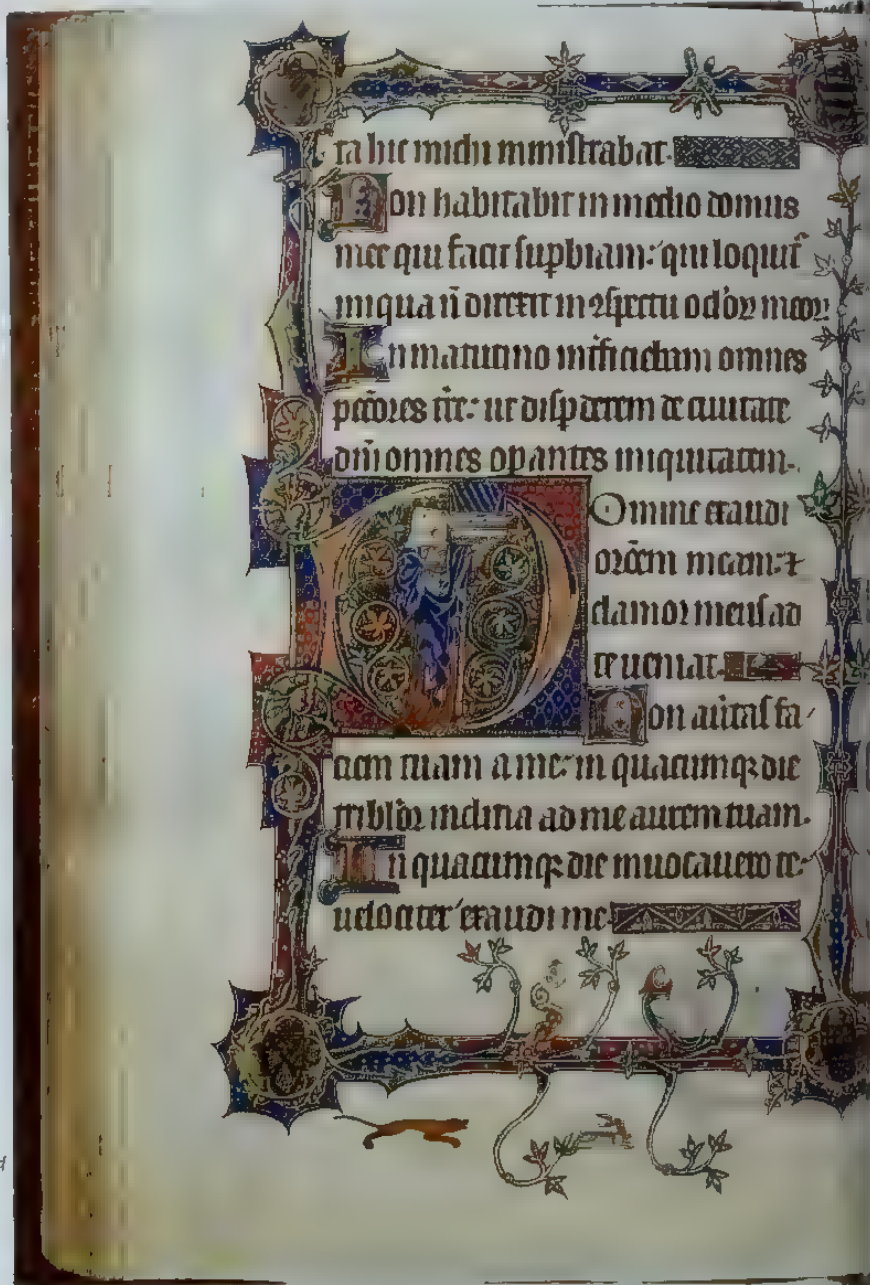
SELF-DESTRUCTING PAPER

Paper made from rags is strong and lasts a long time but modern paper made from wood pulp does not. It turns yellow, crumbles and finally disintegrates altogether because it contains a lot of acid. In only 60 years a modern book can end up looking like this.

A medieval Psalter

Coat of arms

IN THE MIDDLE AGES it took a long time and cost a great deal of money to produce a magnificent book like the one shown here. It is a Psalter, a book containing the words of the Psalms, for use in Christian church services and in private prayer. Rich people who wanted to show how wealthy and important they were paid scribes and artists to make illuminated manuscripts like this just for them. This Psalter was made in about 1315 for a rich person associated with the town of Gorleston in eastern England, so the book is now known as the Gorleston Psalter. The words of the book, over 500 pages, were copied out carefully and beautifully by hand by just one scribe; the decoration was done by as many as six different artists.



Initial D

Figure of a woman

Patterned background

AT THE BEGINNING

The beginning of Psalm 101 is marked by a large initial letter D with a picture and an ornate pattern inside it. The text was written first and the decoration added later, so a space the right size was left for the letter.

GOthic SCRIPT

The book is written in Latin in a style of writing called Gothic book script, which has very angular and very regular letters.



Initial letter N

Non auitas fa-

Gothic book script

Human head on bird's body

GROTESQUE

Artists drew many strange creatures, called grotesques, with human heads on animal bodies.



LET THE DOG SEE THE RABBIT

The margins of the page are filled with pictures of real and not-so-real scenes. The dog is chasing the rabbit along one of the lines drawn on the parchment when it was being prepared for writing (pp. 20-21).



Grotesque



WELL PRESERVED

Although the book is nearly 700 years old, it is in excellent condition and the colors are still bright and fresh



Coat of arm.

CLUES TO THE PAST

We do not always know when or where a manuscript was made. Sometimes there are clues in the book to help us, like these coats of arms, which belong to families from the Gorleston area.

FLOWER BORDERS

Trees, plants and flowers provided the inspiration for much of the border decoration. Such plants were also used in making the artists' paints.



Flower



FILL UP THE PAGE

When the words did not reach the end of the line, the space was filled in with patterns, birds or animals. A different artist did this kind of decoration from the one who did the initial letters and the other pictures.

Line filler



Line filler

Geometric pattern

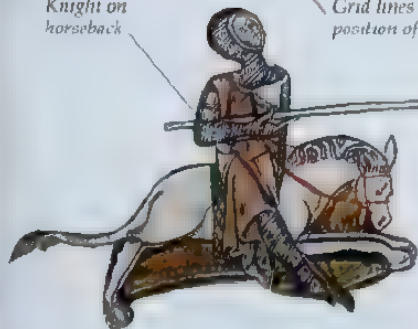


Gold leaf

COLORS OF THE RAINBOW

Artists often had to make their own colors from plants or stones, which they ground up. The fine deep blue was made from lapis lazuli, which only from Afghanistan. Artists also used real gold leaf, which they stuck to the surface of the parchment with glue.

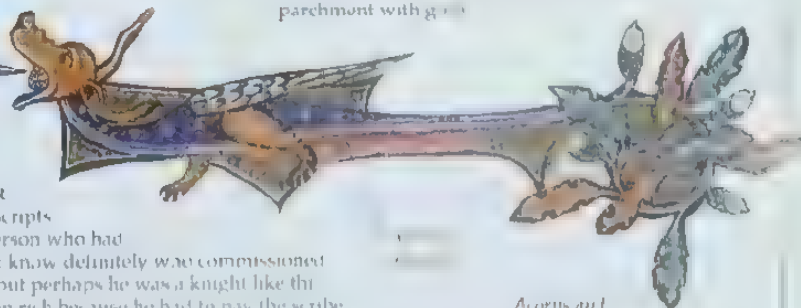
Knight on horseback



Grid lines provide guide to position of words and pictures

HUNTING A MONSTER

Some medieval manuscripts have pictures of the person who had them made. We do not know definitely who commissioned the Gorleston Psalter, but perhaps he was a knight like this one. He must have been rich because he had to pay the scribe and the artists for their work and materials.



Acorns and oak leaves

Manuscript books

DECORATED LETTERS

Many medieval books are illuminated. They frequently have large decorated initial letters to start pages or chapters in the Bible. There is often a small picture inside these letters.

AS IT MARCHED across Europe, conquering region after region, the Roman imperial army brought with it the Latin language and the Latin alphabet. The peoples of western Europe adapted the alphabet to the sounds of their own languages and changed the forms of the letters to create different national styles.

Often these styles were developed by clergymen, and many books were made for the Christian Church, which needed a lot of Bibles and other books for use in its services. Monks in monasteries made magnificent illuminated, or decorated, manuscripts to reflect the glory of God. Not everyone could read or write, but as more and more people learned, they too began to demand books for their everyday life. Until printing became possible in the 15th century, every single book had to be written by hand.



EADWIN

Eadwin was a monk at Canterbury, England, who drew a picture of himself in a Psalter (book of Psalms). Around the edge of the picture he wrote in Latin that he would be remembered forever through his writing.

Flat end for rubbing out

Point for writing

Stone to sharpen knife before cutting quill

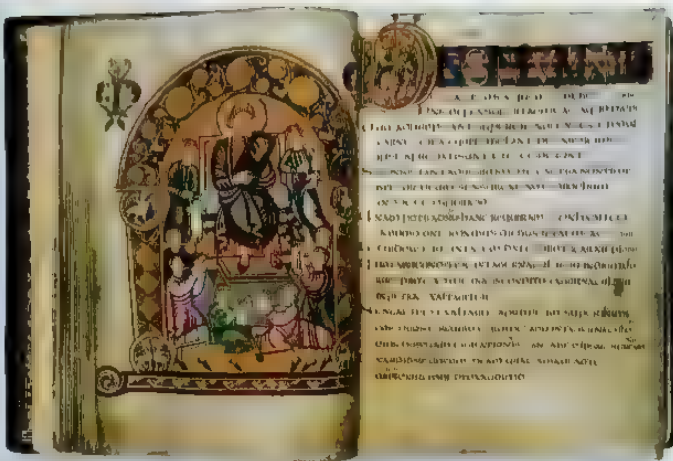
ANGLO-SAXON WRITING TOOLS

As well as writing on parchment, the Anglo-Saxons also used tablets filled with wax for notes and for planning the layout of large books. They wrote on the tablets with a metal or bone stylus that had a pointed end, and they rubbed out the words with the flat end. Writing on parchment is easiest with a hard quill pen (pp 56-57).

Metal clasp holds book closed and keeps parchment curling

BOOK OF HOURS
Individuals wanted small books for private prayer. A book of hours was a special kind of prayer book that was a medieval best-seller. When the book is closed, the clasps hold the pages together.





TWO SCRIPTS

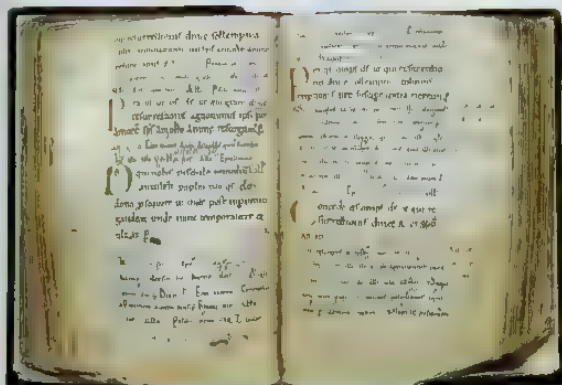
The Europeans found that writing on parchment with a quill pen altered the style of their writing. At first they used capital letters all the time, but later they developed faster styles with small letters. The Latin text of this Psalter is written in uncials, which are rounded letters. There is also a translation into Old English between the lines of Latin that is in a different script.



FIT FOR A KING

Books made for kings and princes often included a picture of the scribe presenting his work to his patron.

Musical notation



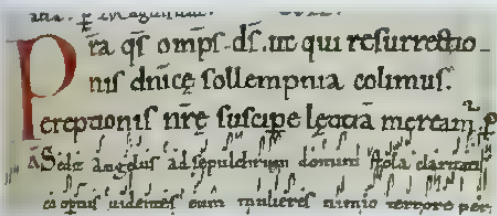
WRITING MUSIC

Musical notation developed about a thousand years ago when marks like these were written above words to be sung in church. They were intended to remind the singers of what they had learned by heart.



CAROLS

By the 15th century, music was written on lines to indicate how high or low the notes should be sung. Scribes used the same materials for music manuscripts as for other kinds of books and decorated them in the same way. This book of carols was made for use in the royal chapel at Windsor Castle, England.



Explanation to help reader

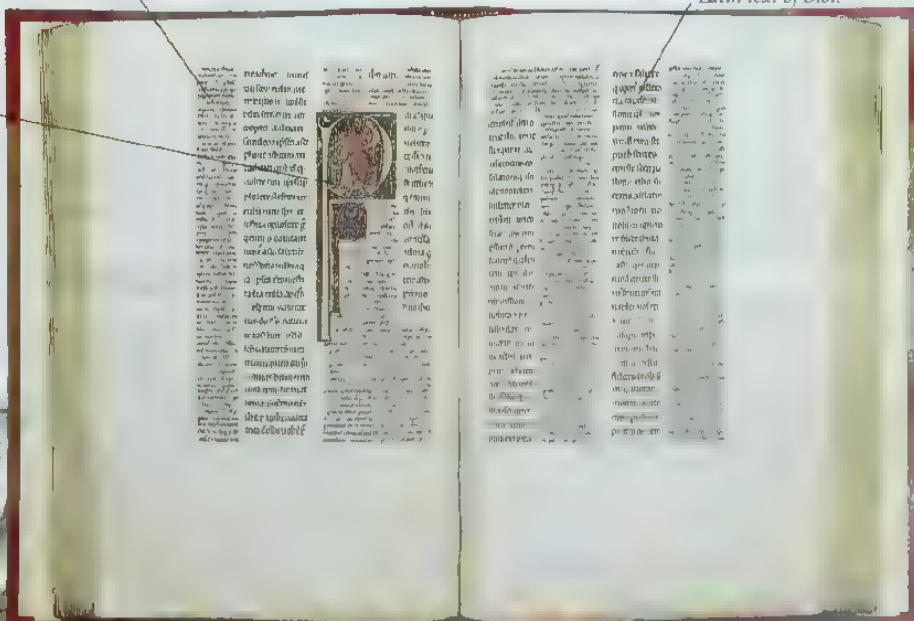
Latin text of Bible

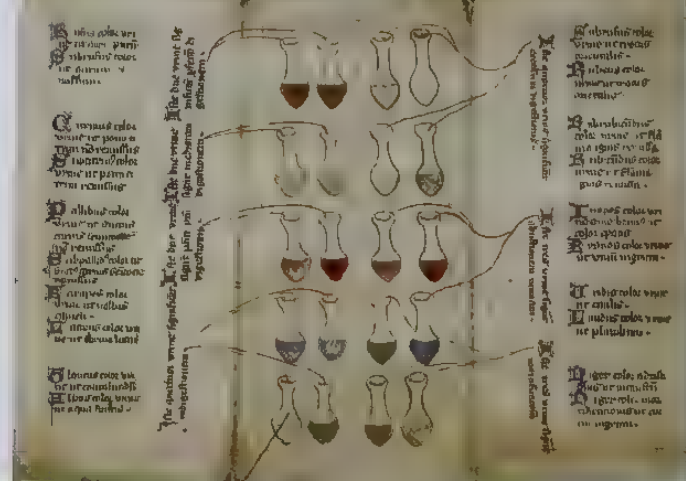
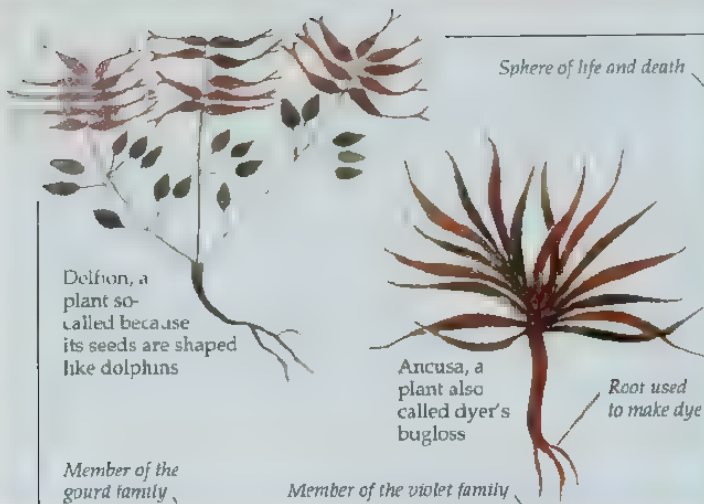
Notes written above the words

Illuminated letter P

MEASURING UP

Part of a scribe's skill was to fit all the words of the text on the pages of the book without huge gaps and without wasting expensive parchment. First the scribe measured the page, marked out the area he could write in, and ruled guide lines. He left a space for the illuminated initials, which were filled in after he had copied out the words. A text like this, in four columns, required particularly careful planning.





HERBAL

As well as religious books there were practical books for everyday life. A herbal gives descriptions and pictures of plants and herbs that have healing qualities. Since this herbal is in Latin, only well-educated people could read it, but most people could probably recognize the plants.

FOLDING BOOK

A book like this was very easy to carry around. The parchment folds neatly into a small strip. By comparing samples of patients' urine with the colored diagrams, the doctor could diagnose and treat their illnesses. It was also possible to predict their futures by using the sphere of life and death.

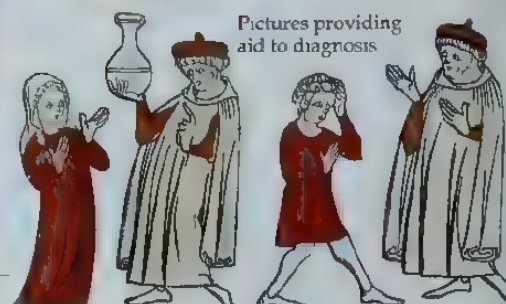


OVER THE COUNTER

It could take a long time to prepare writing materials. Ink was made from soot or oak galls mixed with a gum. Colors were made from ground up minerals and metals. Later in the Middle Ages, illuminators could buy ingredients from an apothecary (pharmacist) like the one in this book of medical miniatures. You could also buy medicines here.



Urine samples



Pictures providing aid to diagnosis

RED INK

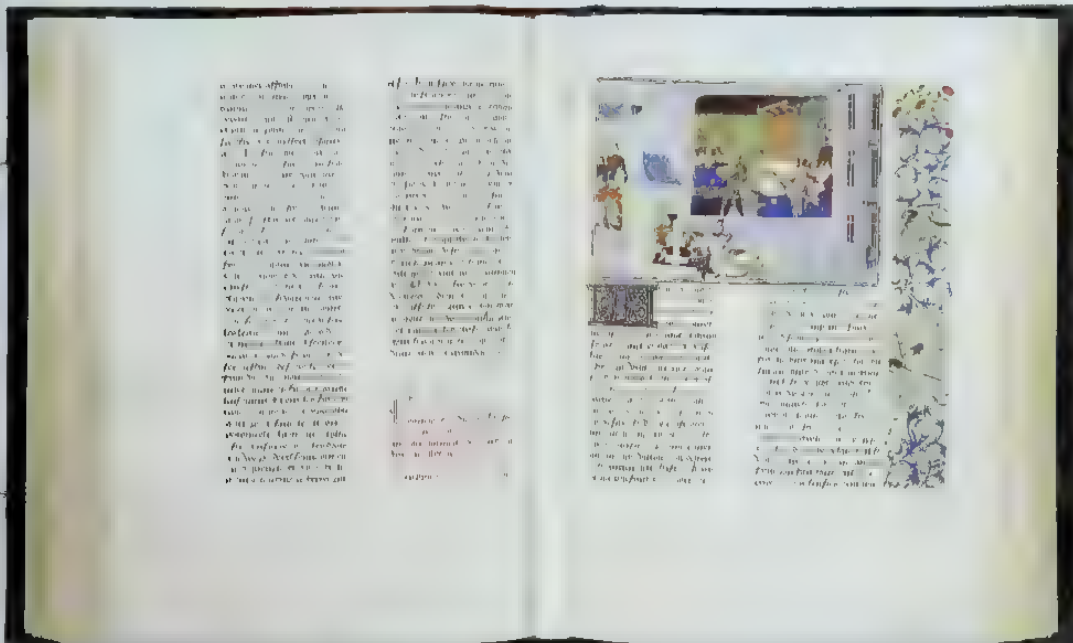
Scribes used red lead, the mineral vermillion, or even crushed kermes beetles to make red ink.

*Le commencement de l'œuvre
fut prime par le comte mar
tal au commandement du
roy d'Angleterre.
Chapitre.*

SWIFT OF HAND
Froissart's Chronicle is written in French in a spiky script called Secretary that is fast to write and easy to read

*que son oncle de clouffre que a
tousiours mais on en seroit as
seures de lui. Et pource qu'il ne
pouoit celle empreinte faire seu*

Words written in Secretary script



SCRIBE AT WORK

Many illuminated manuscripts have pictures of scribes. Here medieval scribe Vincent of Beauvais sits at a desk, pen and knife in hand, poised to begin work. Not all medieval books were made by monks. Later, professional scribes based in towns copied books to order. They had to be able to write in a variety of scripts to suit the book – and the customer



FLOCK OF SHEEP

The most expensive materials for making an illuminated manuscript were the gold for the decoration and the parchment for writing on. Each double page of a large book needed one sheet of parchment, which meant one animal skin – or a whole flock of sheep for just one book. The 14th-century Frenchman Jean Froissart wrote a long and lively account, called a Chronicle, of events in Europe in the late 14th century. The Chronicle was copied many times in books like this.

Paper strip with text



Decorative border from Froissart's Chronicle

IS IT A BOOK?

This world history is one of the most curious "books" ever made. Notes in German on events from the Creation to 1595 were written on long strips of paper. The writing is clear but there is no obvious beginning or end

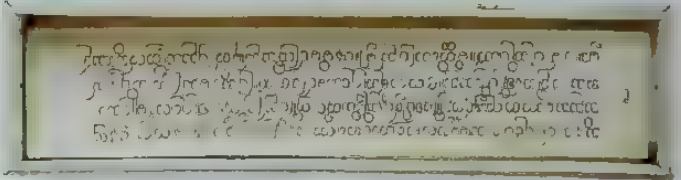
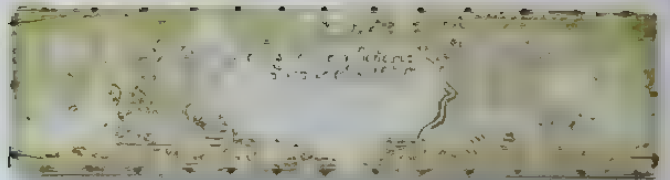
BY ROYAL COMMAND

Kings and other rulers employed clerks to write letters for them and to keep a record of their reign. When the king gave orders to the people, the clerks had to write them out many times to be sent to all parts of the country



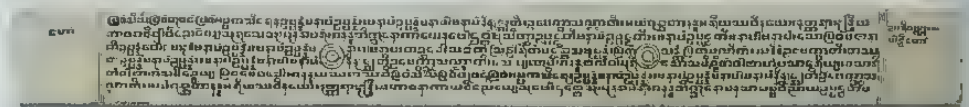
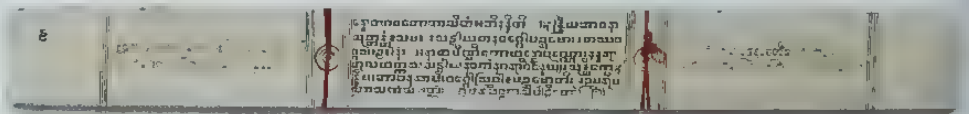
Books from Asia

FOR NEARLY 2,000 YEARS the usual form of book in the western world has been the codex – large sheets of paper folded down the middle, grouped together in sections, and bound between covers. In other parts of the world the book has taken very different forms. You can write on just about any kind of material – natural or artificial. Tree bark, bamboo, cloth, silk, palm leaves, and even ivory have been used and made into books. Bark can be rolled into a scroll; palm leaves can be strung together so that you can find any particular leaf quite easily; sheets of paper as long as 33 ft (10 m) can be folded like an accordion.



IVORY

Ivory from the tusks of elephants has always been a rare and expensive material. In Southeast Asia it was used for sacred writings and for special letters to very important people. This letter was written in 1858 in thick gold paint on seven sheets of ivory. It was sent in its own ivory box. It is written in Burmese script



PALM LEAVES

Palm leaves provide the most common writing material in India and Southeast Asia. Because they are fragile and easily destroyed by damp and insects, not many very old palm leaves survive. These are from the 18th or 19th century. Before a leaf can be written on, it has to be cut to the right size, soaked, boiled in milk or water, dried, and rubbed smooth.



Palm tree from Southeast Asia

Palm leaves with decorated edges

STRUNG TOGETHER

A palm leaf book is not sewn together like a western book, but held together by two cords threaded through holes in the middle of the leaves.

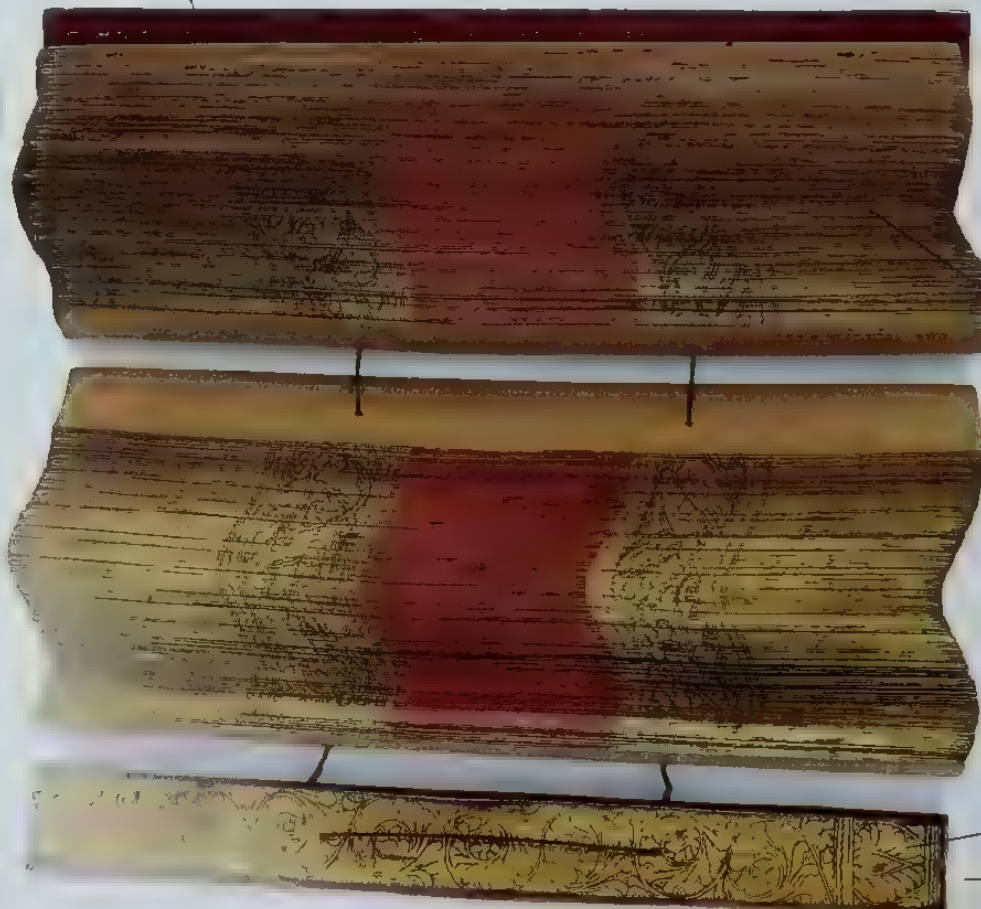
A wooden board, like a cover, is attached to the top and bottom of the pile of leaves to protect it. The edges of the 498 leaves in this book have been gilded and painted with red lacquer.

Decorated wooden board

Blade for scraping surface of palm leaf

Wooden board

Scribes use a bronze stylus like this to write on palm



Vertical Japanese text on a scroll, likely a chapter heading or introductory text.

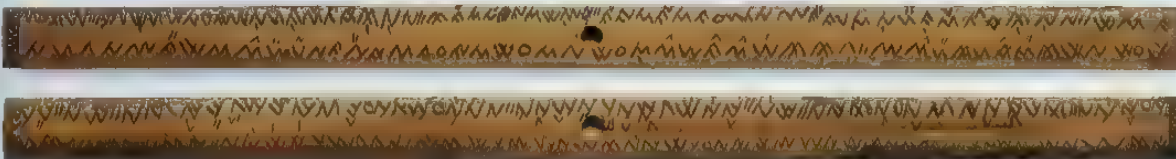
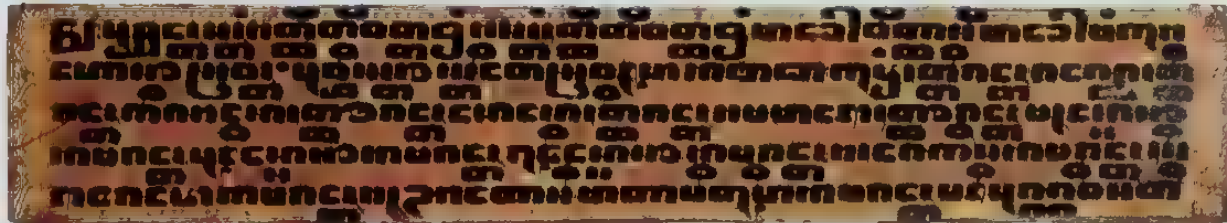


JAPANESE TALES

This Japanese book was originally made in the form of a scroll. It has been converted into an oblong book with pages by folding the book like an accordion. The folds can be seen along the book's outer edge. Both Chinese and Japanese books are made like this because the paper used in them is fine and delicate.

ON YOUR METAL

Because palm leaves are so perishable, legal and religious texts were sometimes inscribed on metal plates. This Buddhist text is written on copper in Burmese square characters.



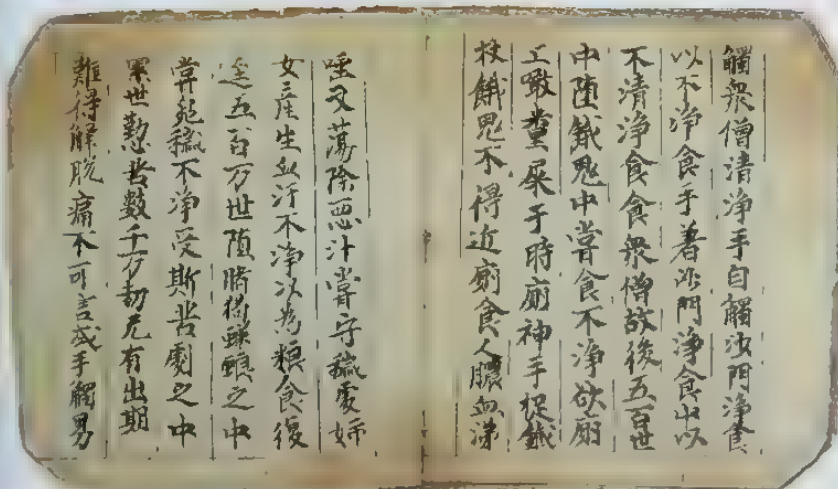
BAMBOO

The ancient Chinese and some later peoples wrote on strips of bamboo. These 19th-century strips are from Sumatra in southeast Asia.

Writing was carved with a knife before being blackened to make it stand out.

CHARACTERS

The Japanese language belongs to a different language family from Chinese, but the Japanese adapted Chinese characters so that they could write down their spoken language. Japanese children learn 881 characters in their first six years at school. Like Chinese, Japanese is written in vertical columns from right to left with a brush and ink.

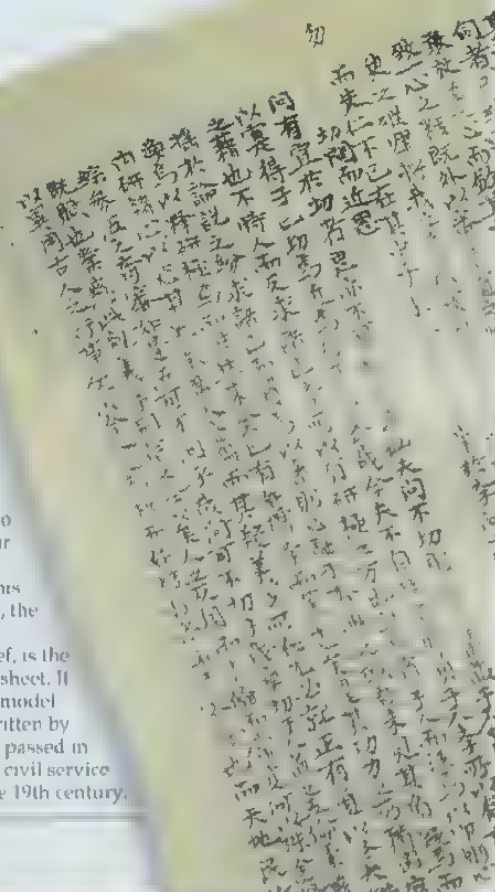


HELP AT HAND

This little booklet is about 1,000 years old. It was designed to help in emergencies. It contains part of the Lotus Sutra, a Buddhist prayer, in Chinese. If you are set upon by thieves or caught in a fire or flood, you recite the prayer and call upon a spirit to help you. It is much easier to open a booklet at the right place than to open a scroll.

SILK HAND-KERCHIEF

Most books are too big to hide up your sleeve in an exam, but this piece of silk, the size of a big handkerchief, is the perfect crib sheet. It contains 94 model answers written by people who passed in the Chinese civil service exams in the 19th century.

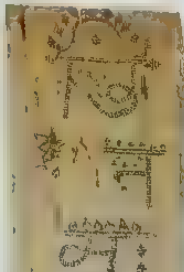




Decorative border

INDIAN SCRIPTS

Knowledge of writing came to India with Semitic traders about 2,500 years ago. Today there are about 200 different scripts in use. This 18th century book is written in the Sarada script from Kashmir, northern India.



Mara, spirit of evil



345

This tiny scroll is written in Indian script called Devanagari.

Decorative border



CUTTING YOUR CLOTH

This book is made from the cloth of monks' old robes. The cloth has been cut into rectangles (the shape of a palm leaf manuscript) and stiffened with black lacquer. The letters are inlaid with mother-of-pearl. The book is a sacred Buddhist text. It was written in square Burmese script, probably in the 19th century.



FORTUNE-TELLING

Folding books are traditional in Thailand as well as Burma. They are made of long sheets of heavy paper made from the bark of the kho bush. This 19th-century book is a guide to telling fortunes using the Chinese horoscope. Each year has an animal sign, and the animal is shown in four different positions for different parts of the year.

BUDDHA night

Buddhism originated in India, and as it spread to other parts of Asia so did its sacred writings. The script of the Indian Buddhist monks was adapted by other people for their languages.

FOLDING BOOK

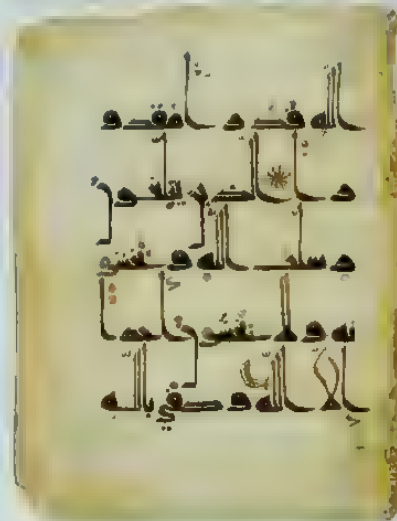
In Burma folding books called parabaks often tell the story of the life of Buddha in words and pictures. Reading from left to right, this book tells of Buddha's meditation, his defeat of Mara, the spirit of evil, and Buddha's enlightenment. A decorated cover protects the book when it is folded.



وَسَبِّحْ بِحَمْدِ رَبِّكَ
سُبْحَانَ اللَّهِ عَمَّا يُشْرِكُونَ

KUFIC

The town of Kufah in modern Iraq gave its name to an early style of Arabic script, called Kufic. The letters are angular with long horizontal strokes. Vowels are shown as dots.



EASTERN KUFIC

Kufic script developed different forms in different countries. Eastern Kufic, from Iran and Iraq, has slender, graceful lines. This page is from a Koran copied about 1,000 years ago. The red and gold rosette marks the end of a verse.

Islamic books

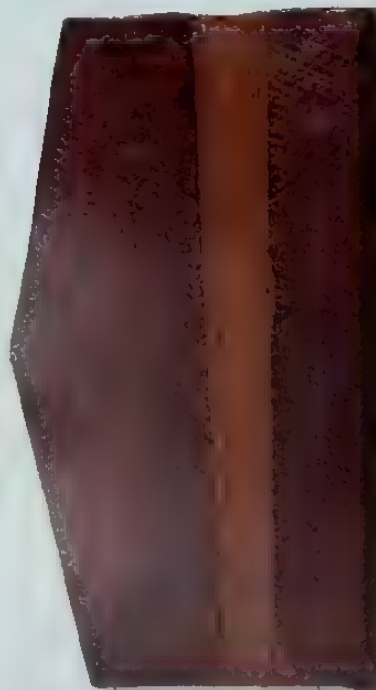
THE ARABS WERE ORIGINALLY nomadic peoples who had little need for writing in their everyday lives. But in the early 7th century, a great change occurred with the revelation of the Islamic faith to the Prophet Muhammad. The word of God was revealed directly to Muhammad and then had to be written down by his followers to ensure that it was always passed on correctly, because the word of God should never be altered. The holy book of Islam, the Koran, is therefore in Arabic, the language of the Prophet, and it is in Arabic script. Muslims the world over read and recite the Koran in Arabic, whatever their own language may be. Arabic script can also be used to write languages other than Arabic itself in the same way that the Roman alphabet is used for many different languages.



WRITING FROM A WALL

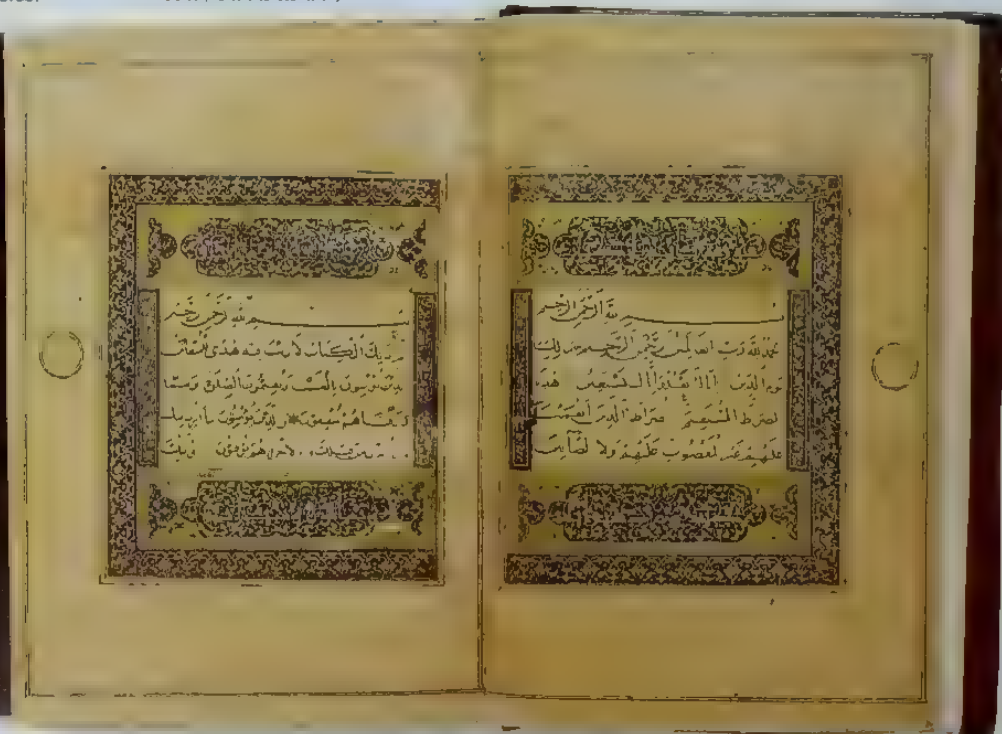
The Koran teaches that the art of writing is a gift that God has bestowed on humans. As well as its practical use in giving information in books, writing is used as decoration on all kinds of objects. When Muslims worship in a mosque, they can see writing all around them. Texts from the Koran are often found on tiles, like this example from a mosque in Isfahan, Iran.

Text from the Koran



Flap to protect the book

Original leather binding



THE KORAN

Muslims believe that the Koran contains the words of God exactly as they were given to the Prophet Muhammad. Scribes strive to convey the word of God as perfectly and as beautifully as they can. This Koran was copied in Turkey about 500 years ago in Nashki script, which is now the script most frequently used for the Koran.



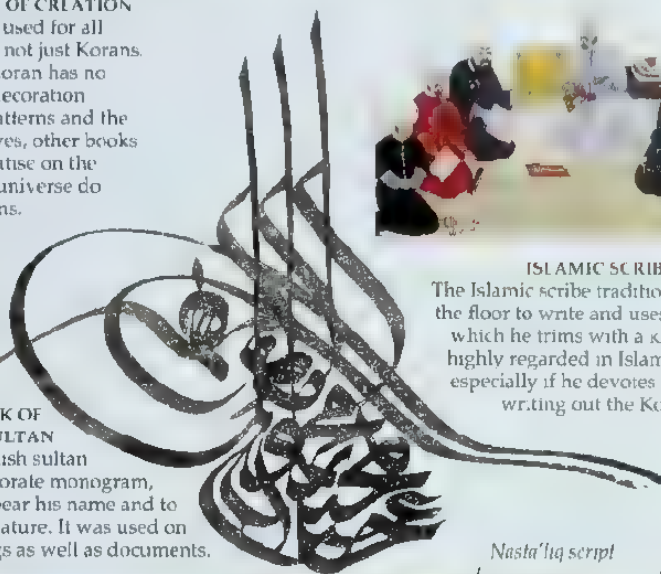
THE WONDERS OF CREATION
Arabic script is used for all kinds of books, not just Korans. Although the Koran has no pictures, only decoration composed of patterns and the letters themselves, other books such as this treatise on the creation of the universe do have illustrations.



ISLAMIC SCRIBE

The Islamic scribe traditionally sits on the floor to write and uses a reed pen which he trims with a knife. He is highly regarded in Islamic society, especially if he devotes himself to writing out the Koran.

MARK OF THE SULTAN
Each Turkish sultan adopted an elaborate monogram, called a *tugra*, to bear his name and to be his official signature. It was used on coins and buildings as well as documents.



Nasta'liq script

Decorative border



FIT FOR A PRINCE

The decoration on the borders of this page is made up of stylized flowers and leaves. The book is richly decorated throughout with many large pictures and was probably made for an important person like a prince.

BOOK OF KINGS

The Persian language is written in Arabic script. This copy of the Persian national epic poem called the *Book of Kings* is in graceful script called Nasta'liq. Legend says that the calligrapher who created this script modeled the shape of his letters on the wings of a flying bird that appeared to him in a dream.

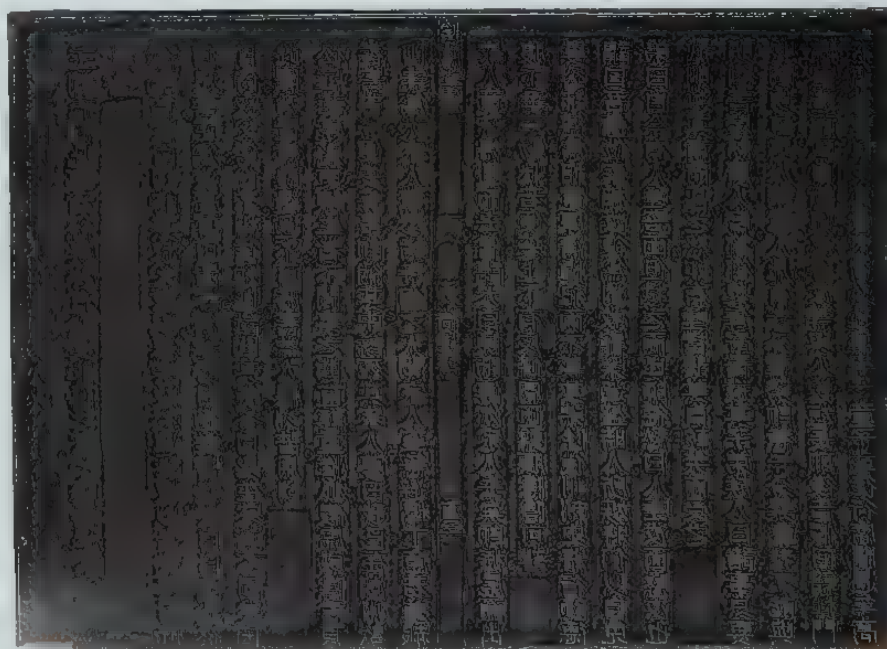


PIONEER OF PRINTING

German goldsmith Johannes Gutenberg (c. 1400–c. 1468) is credited with inventing movable type about 550 years ago. He found a way of making large amounts of type quickly and cheaply. The idea spread rapidly throughout Europe.

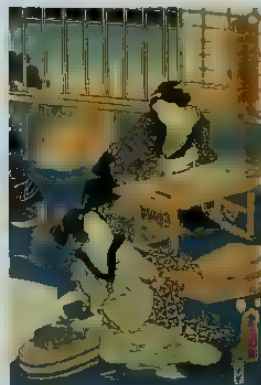
Getting ready to print

FOR CENTURIES, THE ONLY way to produce a book was to write it all by hand. Even with many scribes working together, only a small number of books could be made. There had to be a quicker and cheaper way to satisfy the ever-increasing demand for books, but the Europeans were very late in discovering it. Printing was invented well over a thousand years ago in the Far East, almost certainly in China, but was not adapted for use with western scripts until the 15th century. The Chinese printed scrolls and books using wooden blocks with whole pages of characters carved into them. The greatest advance for western printing was movable type – a single letter on a small block that could be set into words, lines, and pages, and re-used many times.



CHINESE WOODBLOCK

The Chinese used blocks of pear or jujube wood for printing. The text of one or two whole pages was first written out by hand in ink and then laid face-down on top of the block. The block was then cut so that the text stood out in relief and in reverse. The printer spread ink over the block and pressed a sheet of paper down on it to leave an impression of the characters the right way around.



BLOCKMAKERS

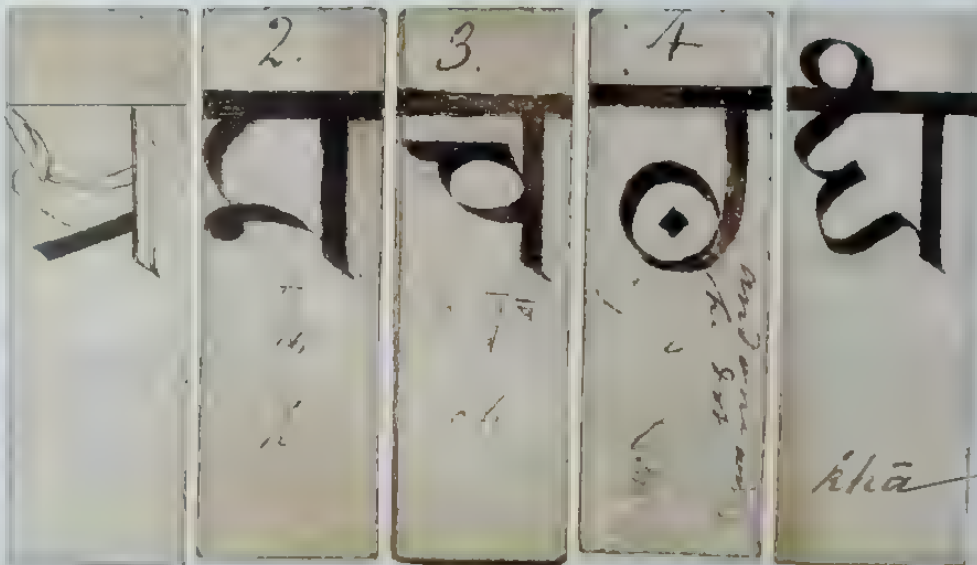
These Japanese blockmakers are cutting a wood block to produce a result similar to the Chinese block shown on the left. They are using a mallet and chisel to cut the shapes in the wood.

Chinese characters in reverse.

Unpushed letter

FIRST STEPS

The first stage in printing with movable type is to design the shape of the letters. Gutenberg used his letters on the writing of German scribes. These pattern cards show the attempts of an Englishman, Sir Charles Wilkins (1749–1831), to design type for Marathi, a language using Indian script.

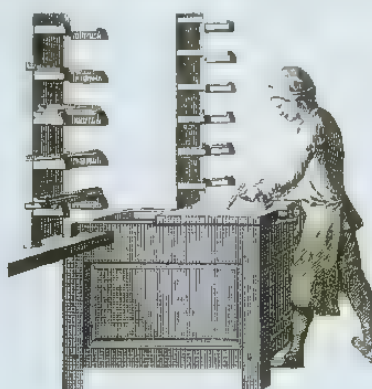


Marathi letter in ink

Notes on the Marathi letter

TYPE FOUNDRY

Movable type is made from a mixture of tin, lead, and a bluish-white substance called antimony poured into a mold by a worker called a typecaster. A skilled typecaster could cast 4,000 letters in a day – that is, one every 10–12 seconds but only the best could make each one perfect. Type often came out uneven, making it useless for printing.



IN BUSINESS

Many different craft workers were involved in the process of making perfect type for printing. This man is using a plane to shave off rough parts after the type has been cast.



MAKING PUNCHES

The first step in casting metal type is to make a punch out of hard metal. Using the drawings of the letters of the alphabet as a model, each letter is carved in relief on the end of the thin stick of metal so that it stands out.



USING THE PUNCH

The typecaster next hammers the punch into a small block of soft metal, such as copper, to leave an impression of the letter.



MATRICES

The piece of soft metal with its impression of a letter is called a matrix. This is put into a mold and held tightly in place. Hot molten metal is then poured into the mold until it is full to the top.



PIECES OF TYPE

When the mold is opened the piece of metal type can be removed. One matrix can be used to make many identical pieces of type.



MODERN MATRICES

These matrices have been made recently from the old punches shown on the left.



BOX OF TRICKS

This box contains a set of matrices for casting type for the Marathi letters on the pattern cards opposite. The box lay unopened for 140 years after Sir Charles Winkley's death in 1836. The people who made the matrices for Sir Charles used exactly the same processes as Gutenberg's workers several centuries before.

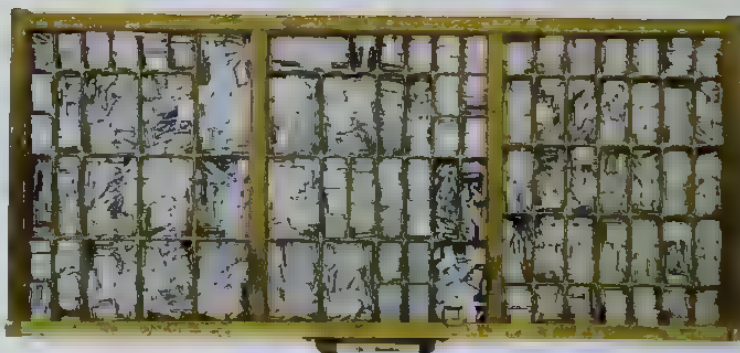
अ ई ङि ह अ म ई
उ ढ ण न य च घ
प भ ष उ च छ ा
म षि क्त क स घ ङि
न त्र च घ य ङि न
म रु म उ छि ङि प
इ ई ई ई ई ई ई

PROOF THAT THEY WORKED

When Sir Charles' matrices were discovered, this were used to cast type and the type was used to print a specimen on a hand print.

Typesetting

ONCE THE PRINTER has acquired a set of type, the actual printing process can begin. One of the advantages of movable type is that mistakes can be more easily corrected than with woodblock printing. If a Chinese printer made a mistake when carving a woodblock, the character had to be cut out and replaced with another, which might not fit properly. The printer with movable type can easily substitute one letter for another without any loss of quality. A printer's reputation rests on the finished work, so printed text is checked carefully at every stage.



TYPECASE

A traditional printer stores type in a wooden tray called a typecase. For each letter of the alphabet there are three sorts of type: capital letter, small capital, and small letter. There are also numbers, punctuation marks, and spaces - making up about 150 different sorts in all. Each has a compartment of its own in the typecase.

1 COMPOSING

Putting type together for printing is called composing. The compositor picks out type from the typecase and arranges it on the composing stick. The grip on the left can be adjusted to give the correct length of line. The first printers used wooden composing sticks, but later metal ones were introduced.

2 THE WORLD BACKWARD

Here is the Roman alphabet in capital and small letters of two different sizes. The size of a typeface is measured in points: the bigger size is 24 point; the smaller, 12 point. In the composing stick the letters read from left to right, but they are upside-down and back-to-front so that they will eventually print the right way around.



Block of type being transferred

Composing stick



4 GALLEY

Spaces between blocks of text in the galley are filled with solid metal pieces called leading. They are lower than the type and so do not print.

24-point type

Leading



THE CAREFUL COMPOSITOR

The compositor must always take care to pick the right letters from the case. A mistake here can mean an error when the book is printed.

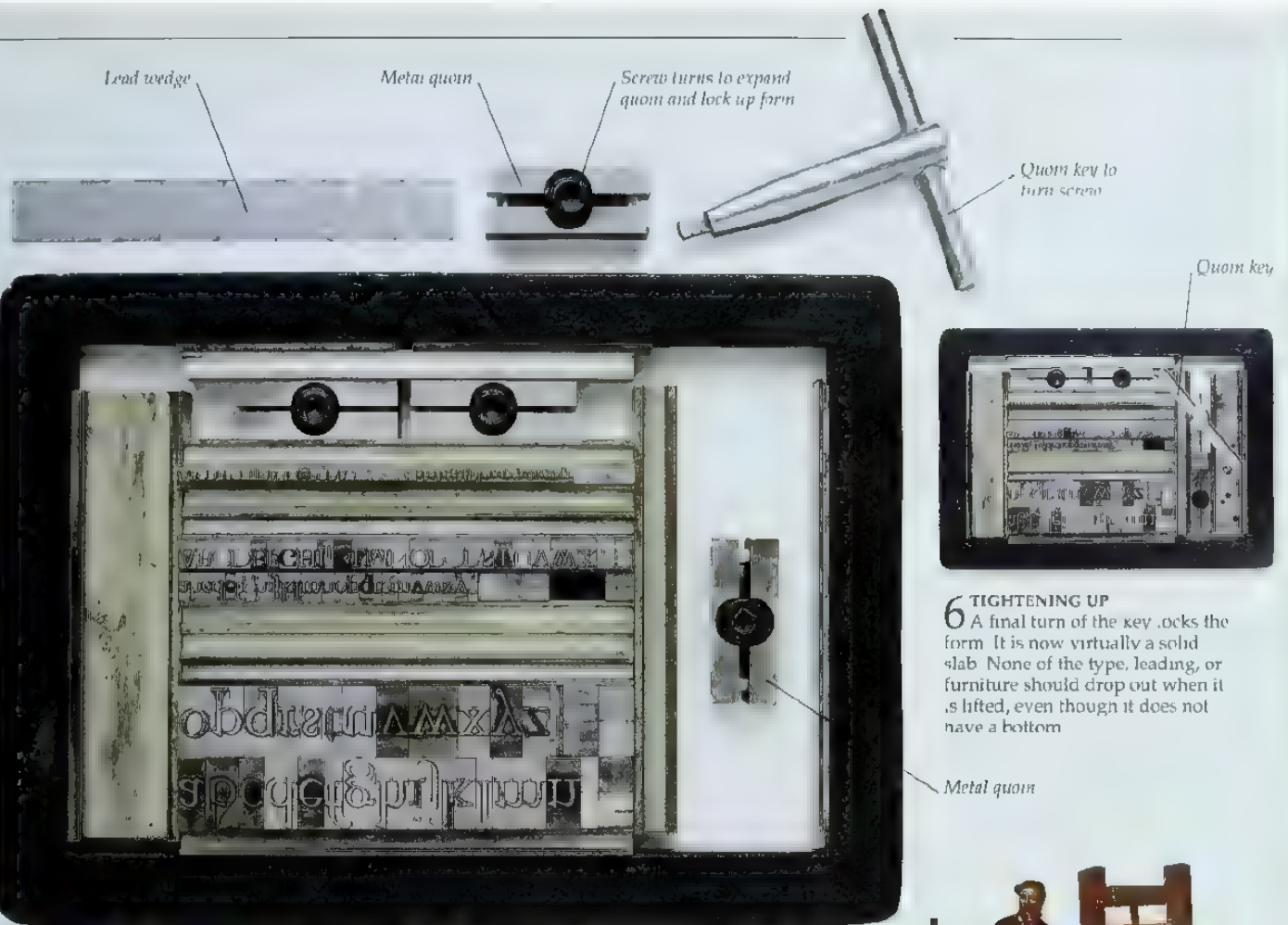
3 STEADY HAND

When the stick is full, the compositor carefully lifts the block of type out and puts it on a larger tray called a galley. One slip of the hand can ruin all the work.

60-point type

Special forms of letter fit neatly together





6 TIGHTENING UP
A final turn of the key locks the form. It is now virtually a solid slab. None of the type, leading, or furniture should drop out when it is lifted, even though it does not have a bottom.

Metal quoin

5 CHASE
When all the type is ready, it is moved from the galley to an iron frame called a chase. The spaces between the type and the chase are filled up with wedges known as furniture. The chase, type, and furniture together make up a form. Originally the wedges were wooden, but later metal ones were used.



Printers put ink on the form using a leather ball stuffed with horsehair.



Raised type



7 INKY FINGERS
The form is now ready for inking and then printing. The water-based ink used by medieval scribes was not suitable for printing, as it could not be spread evenly over the type. So printers developed an oily ink made with nut or linseed oil; a pigment based on soot gave a rich deep black.



GUTENBERG'S WORKSHOP
Johannes Gutenberg must have been proud of the first perfect sheet printed with his new invention: movable type. He had come up with a simple idea that transformed the way books were produced.

abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ

RED-LETTER DAY
This is what the upside-down, back-to-front alphabet looks like when printed in red.



On press

JOHANNES GUTENBERG PRODUCED the first page printed with movable type in the German town of Mainz in the 1450s. He built a wooden press with a screw mechanism like those of the presses used in crushing grapes to make wine. This pressed paper against raised type (pp. 38–39) covered in ink so that the type made an impression on the paper. The news of Gutenberg's success spread very rapidly around Germany and into the nearby countries. By the end of the century there were printing presses in almost every country in Europe. For the next 400 years or so, printers used presses of the same basic design as Gutenberg's, with wooden presses being replaced by iron ones, which were stronger and lasted longer. In the 19th century the hand press was superseded by machines for mass production. But the finest printing is often still done by hand.



EVERY PICTURE TELLS A STORY

Some early printed books have pictures. The image was carved in reverse on to a woodblock and the block put into the form (pp. 38–39) with the type. This is a picture from Chaucer's *Canterbury Tales*, printed by Caxton in 1483.



WILLIAM CAXTON

The first English printer was William Caxton (ca 1422–1491). He learned the new craft in Cologne, Germany, and printed his first book in Bruges, Belgium. Later he returned to England to set up a printing shop in London.

A Peman hadde he and? seruauntis nomo
At that tyme for he lyst to ryde so
And? he was clady in cote & hood? of grene
A sheef of pecol arowles bryght and? shene

LIKE A MANUSCRIPT

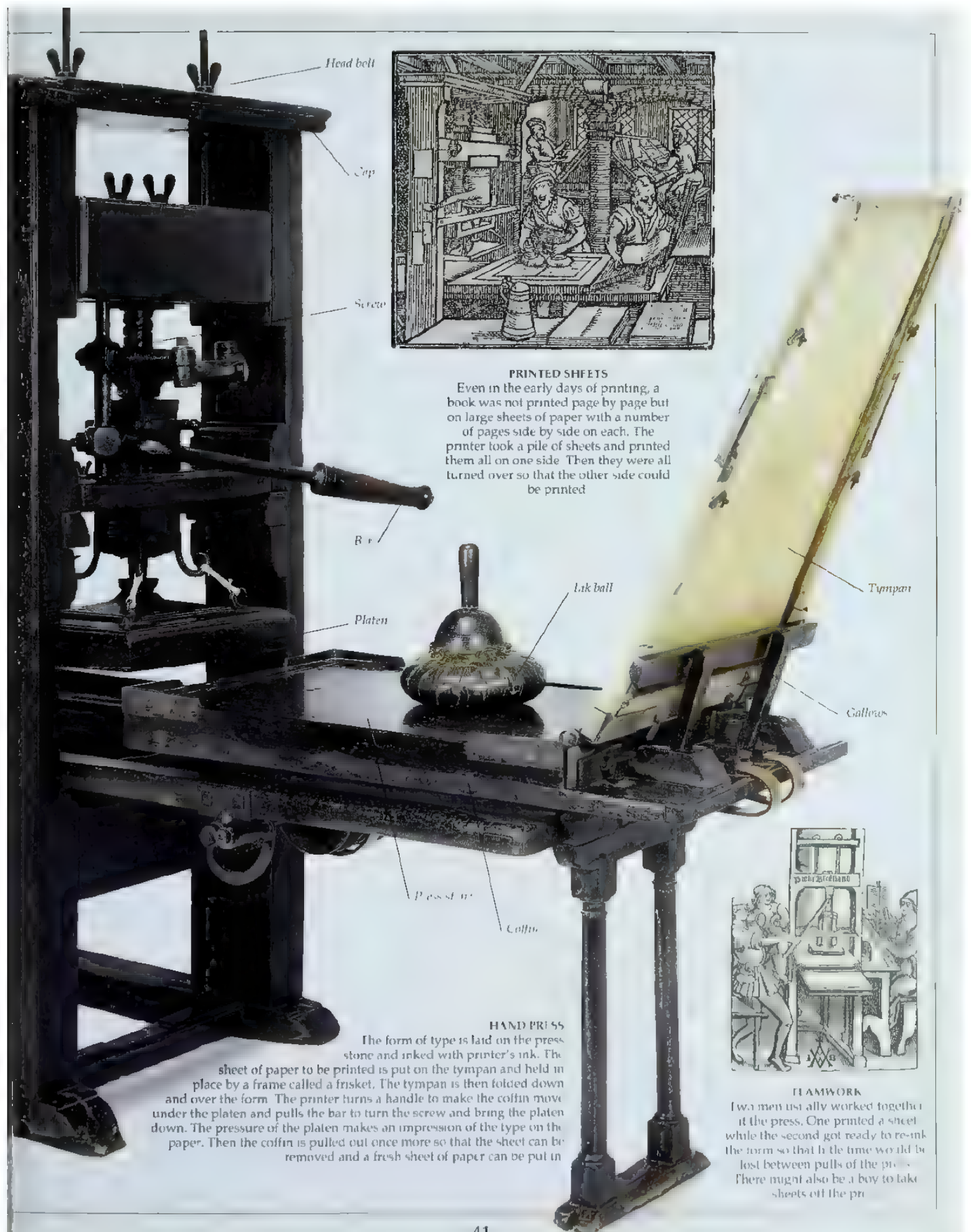
The first printers wanted their books to look like the beautiful manuscripts that people were used to buying. They even used a large initial letter at the beginning of a section, just as illuminators had done, but these letters were printed with woodblocks after the text had been printed. Here a small "a" in type showed which initial to add.



THE PRINT SHOP

Compositors and printers often worked in cramped, dark print shops. Here, the paper is delivered as the printers are inking up forms and operating the press. Finished sheets are hung up to dry around the room. The master watches with a stern eye to make sure that no one is slacking. In England a printer served an apprenticeship of at least seven years under one master before he was free to work where he chose.



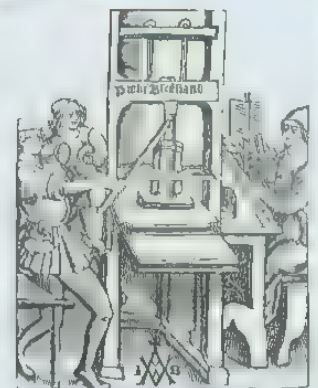


PRINTED SHEETS

Even in the early days of printing, a book was not printed page by page but on large sheets of paper with a number of pages side by side on each. The printer took a pile of sheets and printed them all on one side. Then they were all turned over so that the other side could be printed.

HAND PRESS

The form of type is laid on the press stone and inked with printer's ink. The sheet of paper to be printed is put on the tympan and held in place by a frame called a frisket. The tympan is then folded down and over the form. The printer turns a handle to make the coffin move under the platen and pulls the bar to turn the screw and bring the platen down. The pressure of the platen makes an impression of the type on the paper. Then the coffin is pulled out once more so that the sheet can be removed and a fresh sheet of paper can be put in.

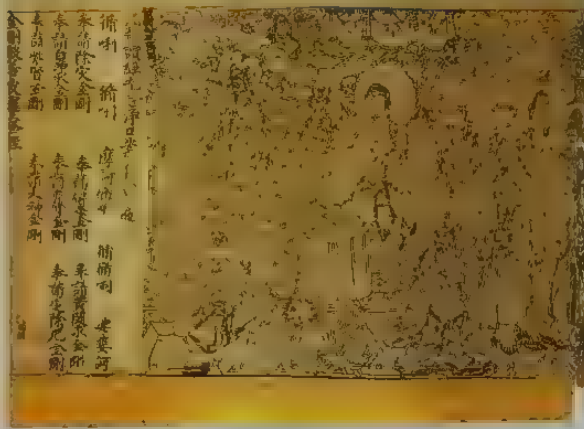


TEAMWORK

Two men usually worked together at the press. One printed a sheet while the second got ready to re-ink the form so that little time would be lost between pulls of the press. There might also be a boy to take sheets off the press.

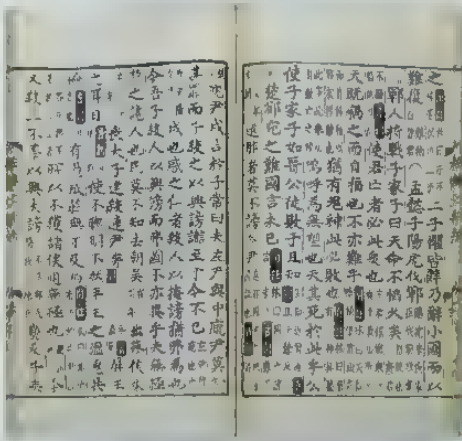
Early printed books

PRINTING WAS INVENTED because books, which had to be written out by hand, could not be produced quickly and cheaply enough. The first printers knew that there was a great demand for books, but also that people generally liked what they knew and often distrusted new ideas. They found ways of giving people the kind of books they were already familiar with, but in much greater numbers. The Diamond Sutra, a Chinese scroll printed with woodblocks, looks very much like a Chinese manuscript scroll. To make the first European printed books look as much as possible like manuscripts, the printers modeled their type on handwriting and even had illuminated initials and other decoration added by hand. Gradually printers introduced new typefaces, and printed books began to look more like those of today.



DIAMOND SUTRA

This Buddhist prayer on a scroll is thought to be the oldest complete printed book with a known publication date. It was printed in A.D. 868 using wooden blocks on seven sheets of paper glued together to form a long roll. Like many modern books, the first thing the reader sees on opening it is a picture.



KOREAN BOOK

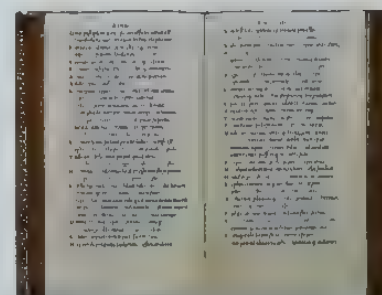
A Korean printer printed this book with metal type at about the same time as Johannes Gutenberg was experimenting with movable type in Germany. Casting the type for the large number of Chinese characters used by the Koreans must have taken a long time, but was one way around the shortage of wood for making woodblocks used in printing.



PRINTING IN ITALY

Printing spread rapidly from Germany to Italy, where Aldus Manutius (1449-1515) printed some of the most beautiful books of the 15th century. Each page of the story in this book is illustrated with a picture printed from a woodcut. The compositor had to put in the right number of spaces on each line to make the words form a pointed shape.

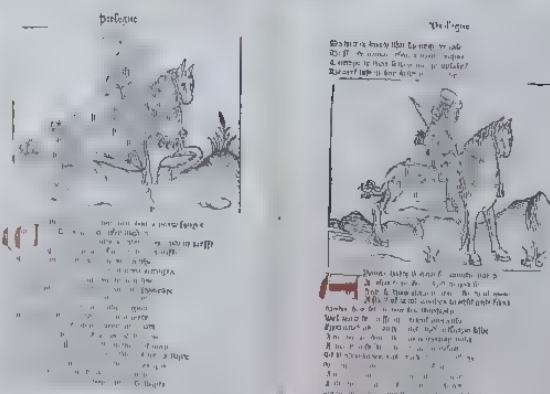
Quæ postquam uates sic ore,



Latin text in italic type

ITALIC TYPE

Aldus Manutius also printed books in a new type which came to be called italic because it was developed in Italy. It was modeled on the handwriting of clerks who worked in Venice. This little book by the poet Virgil was smaller and cheaper than many other printed books.



CANTERBURY TALES

William Caxton printed Geoffrey Chaucer's poem *The Canterbury Tales* in 1476 and again in 1483, when he corrected the text and added pictures. The stories of pilgrims on their way to Canterbury were very popular, and the book sold well. The type is based on the script used in Flemish books and is harder to read than the rounded letters used by Aldus Manutius.

Genotype

[illegible][illegible][illegible]

SPOT THE DIFFERENCE

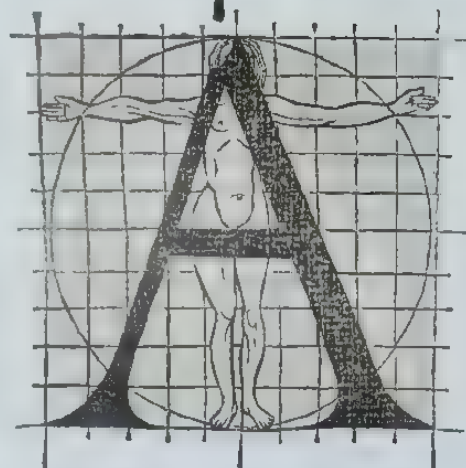
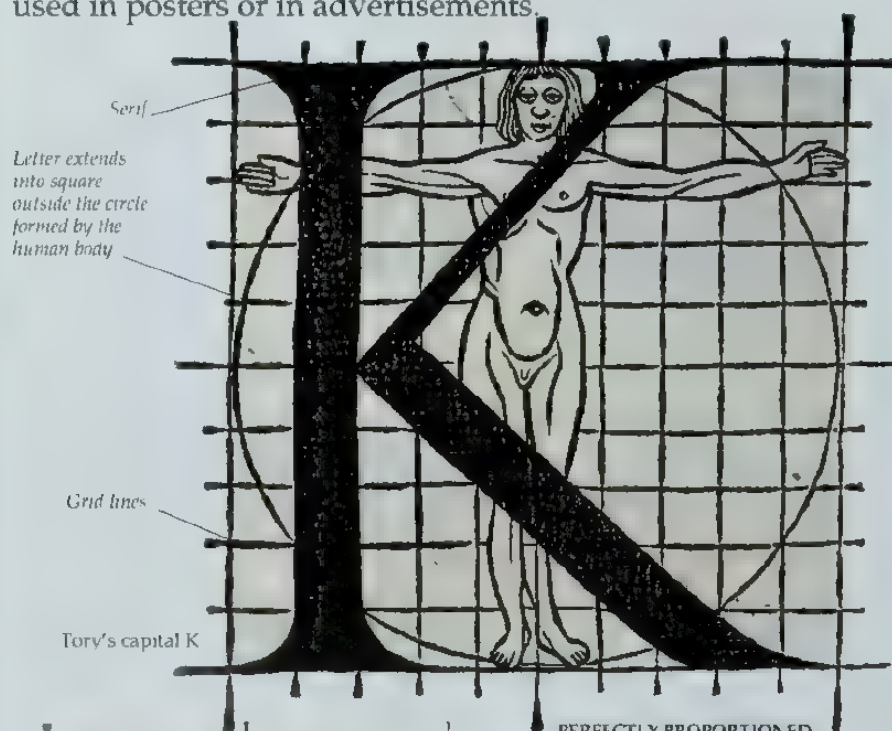
Gutenberg wanted his printed Bible to look as much like a manuscript Bible as possible. He modeled his Gothic type on German script and laid out the page just as the scribes did. The decoration around the margins and the headings at the top of the pages were done by hand after the sheets were printed and before they were bound.



HALLMARK OF QUALITY
Most modern books give the name of the printer and the date of printing. If early printed books gave this at all it was usually at the end in a short statement called the colophon. Sometimes there was just a symbol, a device which a reader would recognize. These rabbits mark the high quality printing of Simon de Colines of Paris.

Typefaces

A TYPEFACE is a full set of type made to a particular design. As well as being Europe's first printer, Johannes Gutenberg was also the first designer of a typeface. He had to be, because the idea of movable type was new and he was trying out his ideas in secret. Since he first made gothic type – which was modeled after German script – many other people, including famous printers, have produced designs for typefaces. Each typeface has a name – Helvetica, Palatino, Times Roman – and each has individual features. Some typefaces are suited to books, because they are clear and easy to read even in a small size. Others are too heavy for a full page of printing but make a dramatic impact when used in posters or in advertisements.



Tory's capital A

PERFECTLY PROPORTIONED

Squared paper can help the type designer to get the proportions of a typeface correct. Geoffroy Tory, a French designer of the 16th century, based these letters on the proportions of the human body. He was influenced in this by the architectural theories of the day as well as by the painter and inventor Leonardo da Vinci.

abcdefghijklmnopqrstuvwxyz

13-point Palatino roman

abcdefghijklmnopqrstuvwxyz

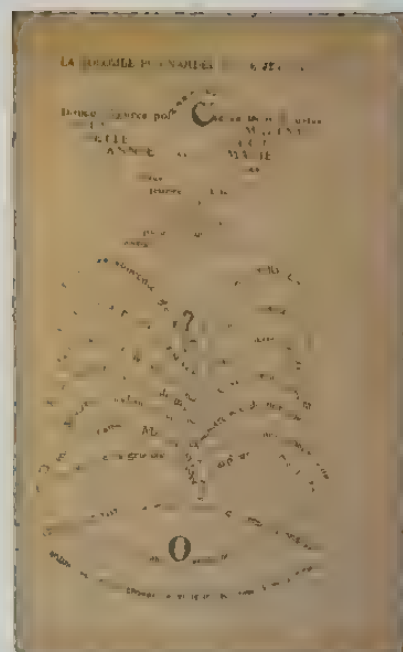
13-point Palatino italic

abcdefghijklmnopqrstuvwxyz

13-point Palatino bold

abcdefghijklmnopqrstuvwxyz

8-point Palatino roman



FOUNTAIN OF TYPE

Islamic calligraphy often takes the form of a bird or animal. It is much harder to do this with printed words, as type is less flexible, but this poem by French writer Guillaume Apollinaire (1880–1918) takes on the shape of its subject, a water fountain.

ABCdefg

HELVETICA

Serifs are the little cross-strokes at the end of many letters. A typeface without serifs is called a sans serif face. Helvetica is one of the most popular of this group.

ABCdefg

TIMES ROMAN

Ancient Roman carved letters had serifs, created by the sweep of the brush when letters were painted on the stone, and then chiseled out by the carver. The typeface Times Roman was designed in 1932 for the London Times newspaper and is now used very widely.

abcdefghijkl

PALATINO

Typefaces with serifs, like Times Roman and Palatino, are easier to read than those without. The serifs form a link between the letters that helps to bind them together as words. This book is set in Palatino, a serif typeface created by type designer Herman Zapf.

STYLES AND SIZES left

A typeface comes in a range of sizes, measured in units called points, and in different styles. In this book the main headings are in 36 point, introductory text is in 13 point, and captions for pictures are in 8 point. As well as the usual style, known as roman, there are also an italic and a bold style, both of which are used for emphasis.

Colour key to identify individual letters



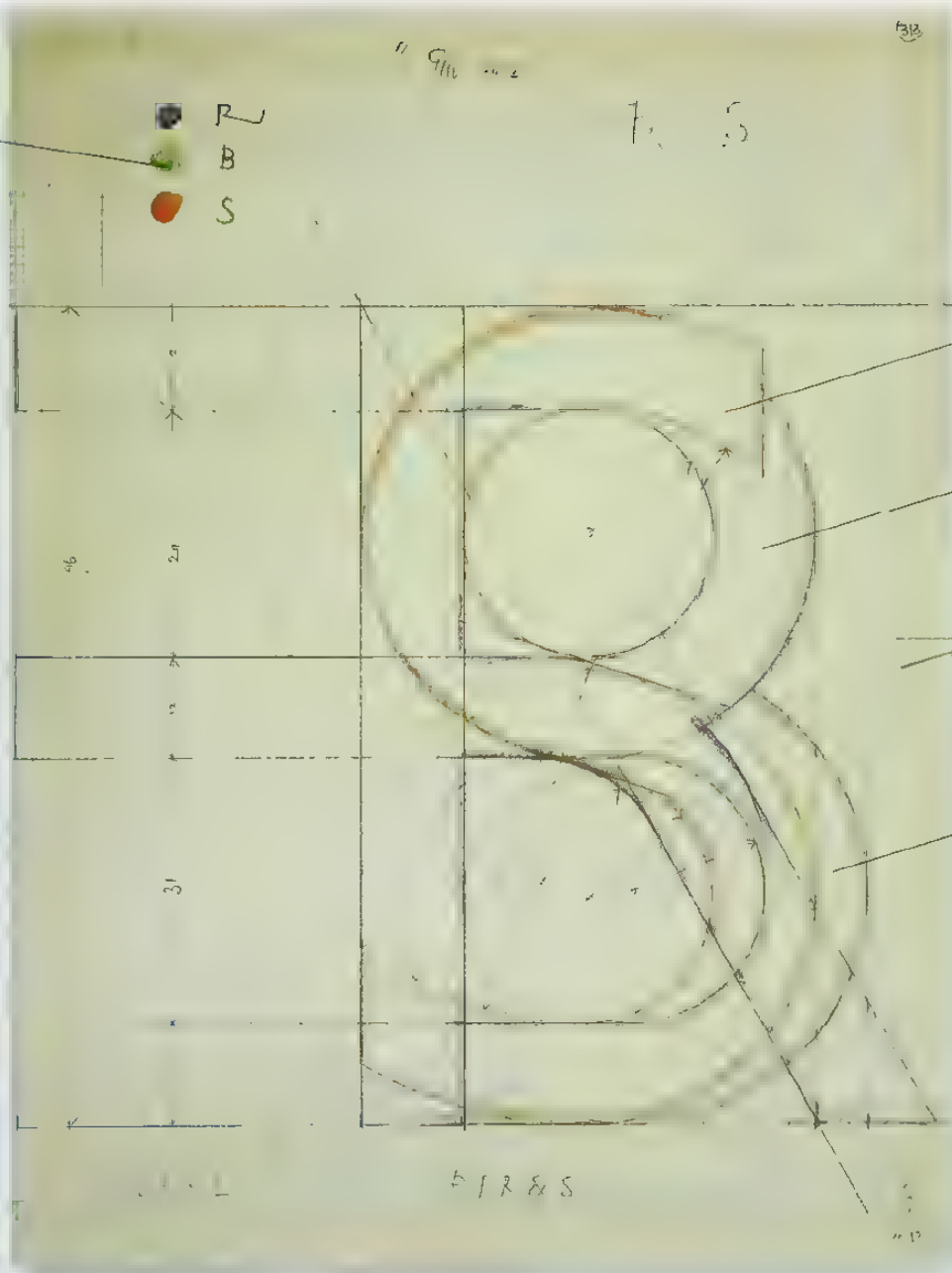
GILL SANS

Eric Gill was a stone carver and calligrapher as well as a type designer. One of his most famous designs is the typeface Gill Sans, so called because it is a sans serif face. In his sketches for the type he has combined several letters or numbers, which are made up of the same basic shapes.



BEING NOTICED

An advertising poster has to catch the eye of the passerby. It uses very large type that can be read easily at a distance.



Memorandum

FANCY FACE

All typefaces are essentially variations on the roman, gothic, or italic letter forms. In the 19th century very fancy ornate typefaces were popular, but they are not very easy to read. This one consciously echoes a medieval script.

INITIAL

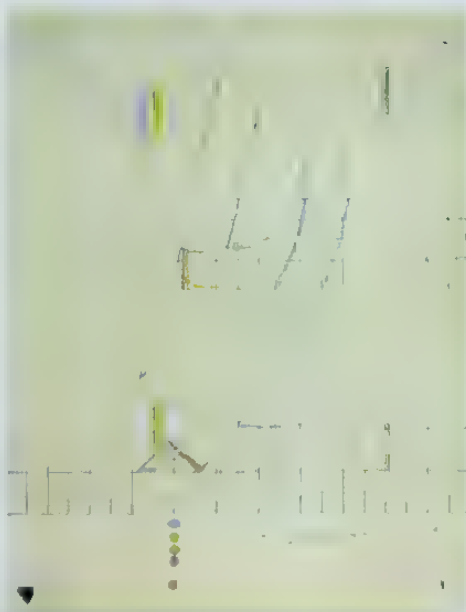
ILLUSTRATION
Type designers of the early 20th century sometimes combined pictures with initial letters, in imitation of medieval illuminated manuscripts (pp 24-29).



ROMAN OR GOTHIC?

Gothic type like that made by Johannes Gutenberg was used in Germany for hundreds of years. In other countries, roman type was the standard form.

Eric Gill's designs for numbers in his Gill Sans typeface



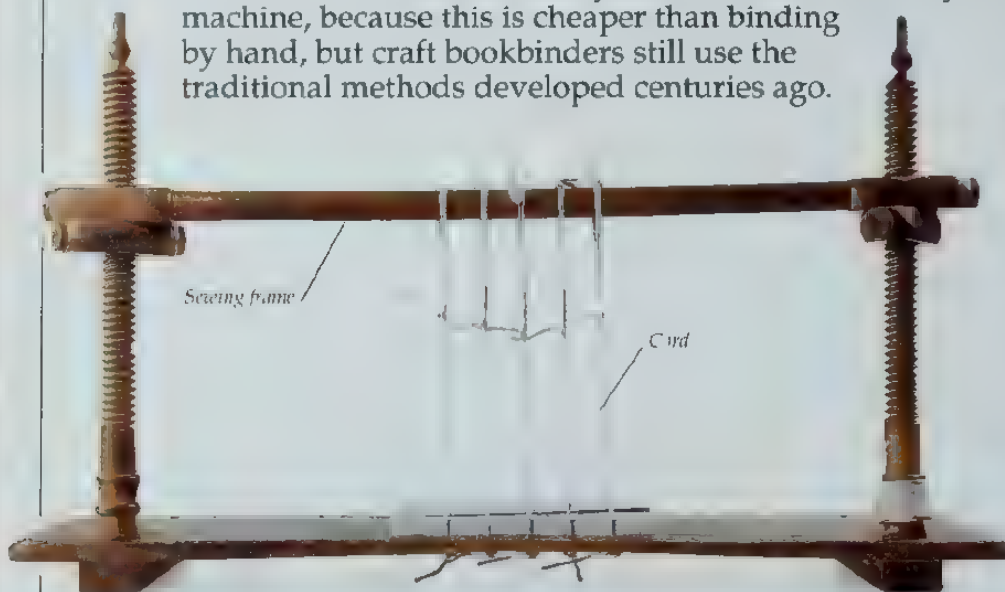
Binding

1 LOOSE SHEETS

The bookbinder receives the folded sheets of paper from the printer. These are put together in groups in the right order, ready for sewing.

EVERY BOOK IS WRITTEN TO BE READ, but the more times a book is opened and the pages turned, the shorter its life becomes. So ever since books took the form they have today, called a codex, people have bound them to give a protective outer covering over the paper or parchment pages. This cover, or binding, can be made of wood, leather, cardboard, cloth, or even old printed sheets or manuscripts. The binding can be plain or very ornate, with decorations of gold, silver, and jewels. For the last hundred years or so most ordinary books have been bound by

machine, because this is cheaper than binding by hand, but craft bookbinders still use the traditional methods developed centuries ago.



2 SEWING

To hold the pages of the book together, the bookbinder sews them to cords. To do this, the cords are stretched between the top and bottom of a sewing frame. On this book, the cords will later show up as raised bands across the spine of the book. When you open a book that has been sewn in this way, it lies flat on the table without damaging the spine.

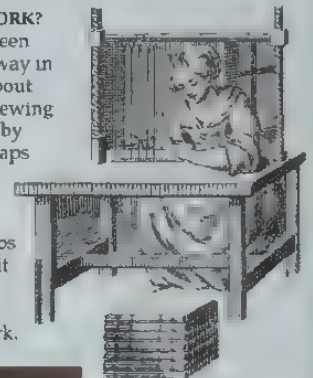


WHERE THE CORDS GO

The sewing thread passes through the fold in the section of the book, around or over the cord, and into the next section. The sections are linked together at the head or tail by a stitch called a kettle stitch.

WOMEN'S WORK?

Books have been sewn in this way in Europe for about 1,000 years. Sewing is often done by women, perhaps because their fingers are nimbler than men's, perhaps also because it fits a stereotype of women's work.



3 ROUNDING AND BACKING

After the book has been sewn, the spine is covered with hot glue to keep the sections from moving about, and the book is put into a press. The bookbinder pounds it gently with a hammer to give it a rounded spine.



4 ATTACHING BOARDS

Now the boards which form the hard sides of the book are attached. Wooden boards were used in the Middle Ages, but today lighter materials such as pasteboard or strawboard are used. To hold the sections to the boards, the ends of the cords are drawn through holes punched in the boards and secured on the inside.

How in board

Raised cord

Rounded spine



5 GIVING PROTECTION

Once the cords have been secured and the boards are firmly in place, a headband and tailband can be added to protect the book when it is opened. The book is now ready to be covered.

Colored tailband

Nippers for making the raised band

Wooden screw press to hold book steady

Raised band

6 COVERING

This book is covered in cloth with leather corners and spine to give extra protection to the most vulnerable parts. The cloth and leather are pasted onto the boards and turned over the edges to the inside.

Brown cloth

Tanned leather dyed brown

Words of the title composed in reverse

Letters for the title

Gold-tooled rose

Gold tooled crown

7 FINISHING TOUCHES

The book is now ready to have the spine decorated. The binder paints the spine with glair (egg white) and lays the gold leaf on it. Heated tools are used to press the design through the gold onto the leather. Then the binder rubs off the surplus gold.

Gold leaf



TRADITIONAL TECHNIQUES

Two hundred years ago binders used the same kind of equipment they use today. Here they are applying gold leaf to the edges of pages and using a roll to make lines.

Wheel or roll

ROLLING ALONG

This roll (or wheel) is used to make a gold line.

Tools for impressing the rose, crown, and lines on the spine

Typeholder

8 THE BOUND BOOK

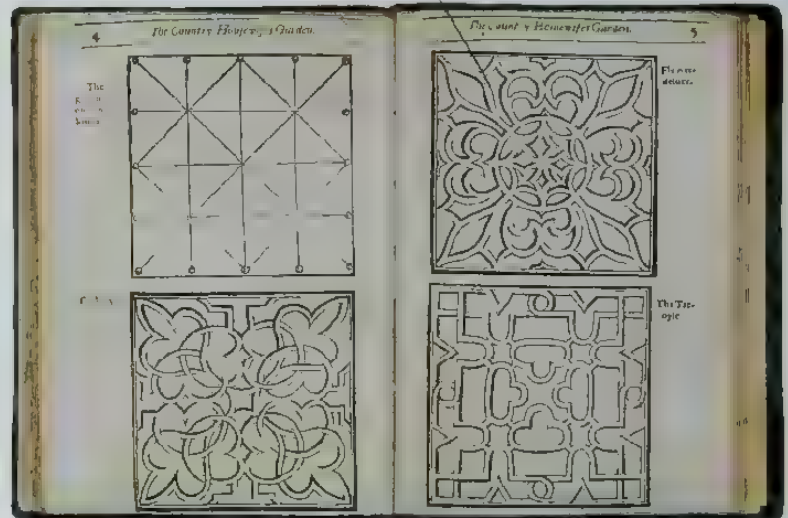
The finished book is attractive to look at and will last a long time.



Illustrated books

PICTURES HAVE ALWAYS been used in books, either to add information or to make the text more attractive. Perhaps the first illustrated books were the ancient Egyptian Books of the Dead, long papyrus rolls with pictures and hieroglyphs. Illuminated manuscripts were the illustrated books of the Middle Ages, and the first printers imitated them by using woodcuts. Medieval manuscripts are magnificent because of their brightly colored pictures and decorated letters. But in early printed books the color usually had to be added by hand after printing. In the 19th century, new technology made color printing possible.

Woodcut showing planting layout for garden



COUNTRY GARDENS

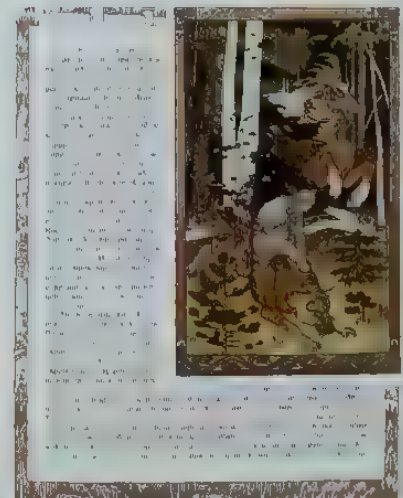
Many practical books would be difficult to understand without illustrations. Printers soon began to combine text and illustrations, just as scribes had done before them. Illustrations were carved into pieces of wood to create blocks from which the pictures could be printed. Such illustrations are called woodcuts. This gardening manual, illustrated with woodcuts, appeared in 1618.

Ein hüpfch New
Lied / Schütz dich Vredem
schütz dich 2c. Ein anders Lied,
Sein Lieb ich miß dich weiden/
ist alles des Klaffers Schuld.



WHAT'S IT ALL ABOUT?

A picture on the title page of a book usually tells the reader what the book is about. This couple appear on the title page of a book of anonymous folk songs published in Germany in 1660. To keep costs down, early printers often re-used woodcuts in different books. Sometimes the pictures had nothing to do with the text!



FAIRY TALES

The role of pictures in medieval manuscripts and in modern books is often simply to illustrate the story. An illuminated manuscript like Froissart's Chronicle (pp. 28-29) and this Russian fairy-tale book, published in 1901, have many features in common. Illustrator Ivan Bilbabin drew these pictures for the story of Prince Ivan, the Firebird, and the Gray Wolf

Border detail from the book of Russian fairy tales



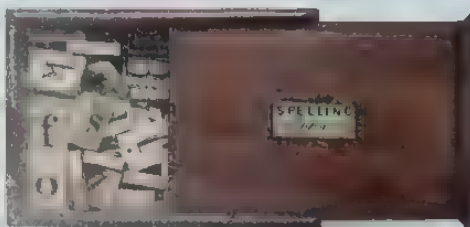
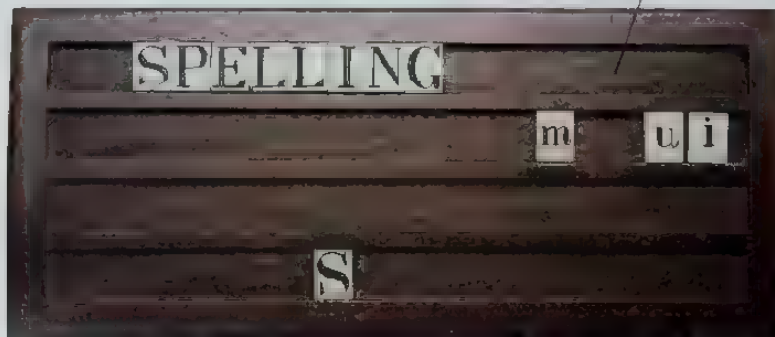
Learning words



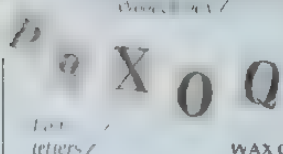
WRITING IS NO LONGER a special skill practiced only by highly trained scribes. To survive in the modern world, everyone needs to be able to write. The invention of printing did much to encourage the skill of writing. Printing made books available to more people than

could have afforded manuscripts, and readily available books made people want to be able to read and write as well. In the 19th century, the introduction of postal services brought an increase in letter-writing, and written communication grew rapidly. In countries where schooling is compulsory for every child, there is no longer a barrier to universal literacy – the idea that every person should be able to read and write.

Wooden spelling board

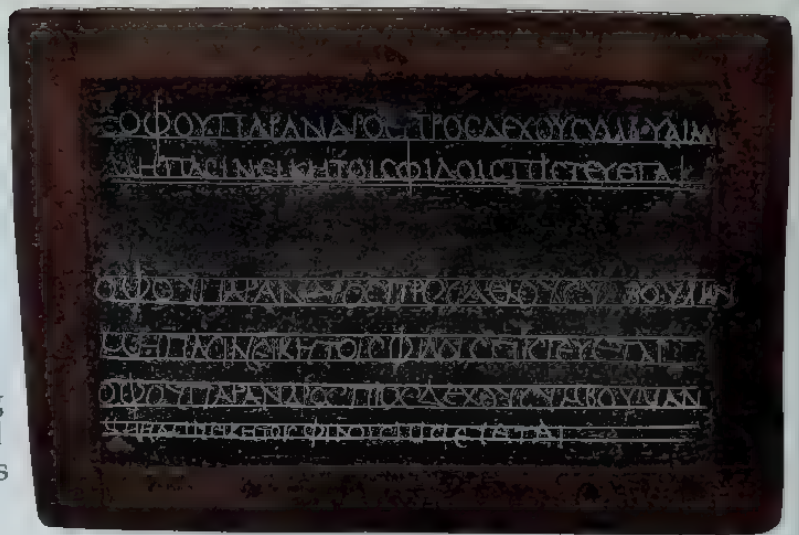


SPELL IT OUT
Learning to spell can be a chore, especially in languages with complicated spelling rules. Items like this 9th-century wooden spelling board could help



WAX CRAYONS

Children have always practiced writing with materials of their own. These early 18th-century wax crayons are as easy for small hands and fingers to use as a pen or pencil



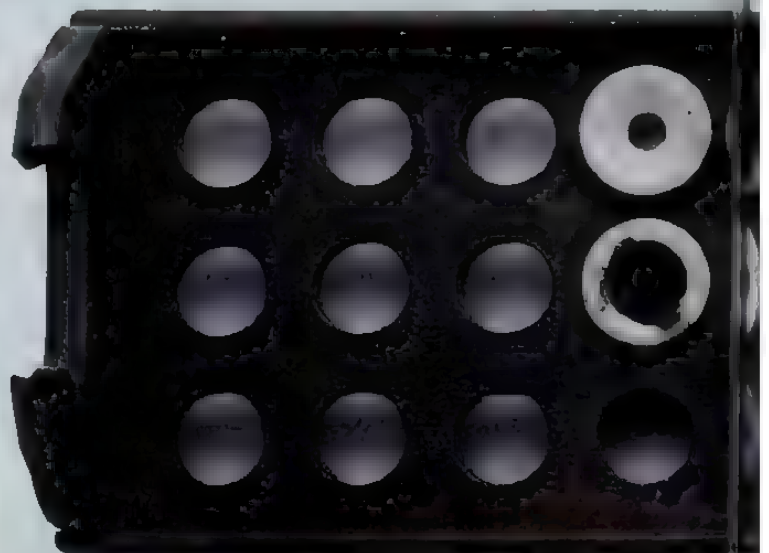
BETWEEN THE LINES

An essential part of learning to write is copying the shapes of letters until you can write them with ease. About 1,800 years ago a pupil made two attempts to copy these lines of Greek from the master's writing at the top. In spite of the parallel lines the pupil's writing was not very neat. Perhaps it was just as well that this was a wax tablet, which allowed the pupil to rub out the letters and start again.



IN CLASS

The classroom of the past was a much stricter place than the schools of today. Children spent a lot of time listening to the teacher and learning by heart. The children who attended this 19th-century school were given a free education, although many parents had to pay in this period.





SAFEEKEEPING

Scribes have always looked after their pens and brushes, carefully keeping them in special cases. Pencil cases come in many shapes and sizes. This wooden pencil box in the shape of a book is three hundred years old.



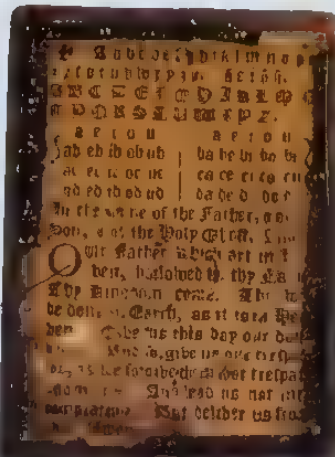
Compass for drawing circles

ON THE SLATE

A hundred years ago children copied letters onto slates with a piece of chalk or a slate pencil. This was not very different from the wax tablets of ancient Greece or Rome.



Paper covered with transparent animal horn



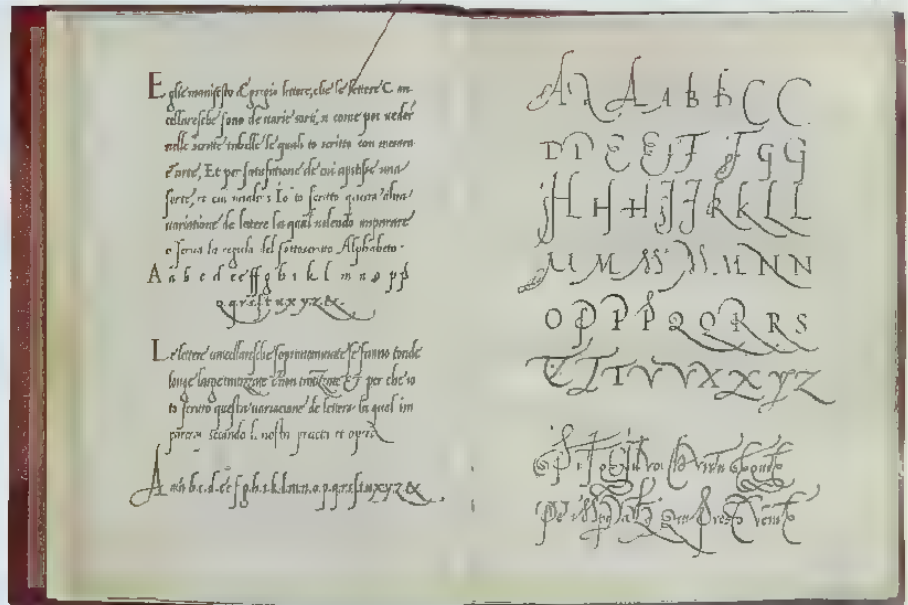
BOOK IN THE HAND

A hornbook, used for learning to read, gets its name from the sheet of horn covering the paper on which the words are printed. It keeps sticky fingers from making marks on the paper.



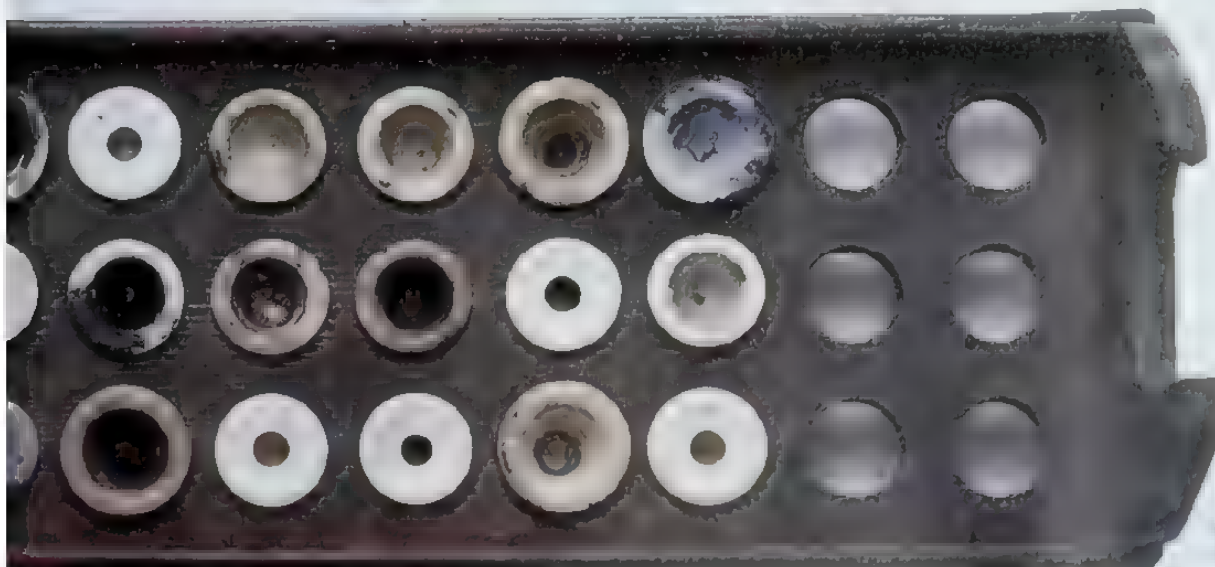
Handle for child to hold while reading text

Chancery script



PRACTICE MAKES PERFECT

For hundreds of years, books have been written which teach the art of calligraphy (pp. 6-7). Over 400 years ago, the Venetian writing master Giovanni Tagliente produced this book. The style of writing shown, called Chancery script, was the basis of the italic type used in printing in Italy (pp. 42-43). The letters in the book are not written, but printed from a woodblock.



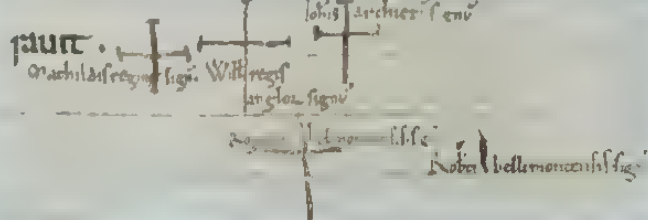
INKWELLS

Once they could form the letters properly, children started to use a pen. By the 19th century, metal inkwells had replaced the wooden ones.

INK FOR ALL

Every classroom needed inkwells, but they were stored away like the

more succedentia uentura habent : mo



KING'S MARK

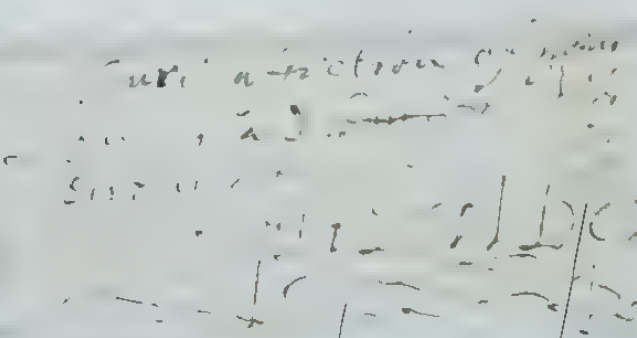
Many medieval rulers could not read or write. Instead of signing his name on this official order William I, king of England (1027-1087), made the sign of a cross, as did his wife Matilda. Later their names were written beside the crosses by someone else.

Willelmus rex Anglorum

Matilda

RENAISSANCE WRITING

The artist Michelangelo (1475-1564) had a typical 16th-century Italian (or italie) style of writing. People still write in an italic hand today, for which they need a special pen with a slanting nib.



Flourishes

Inserted letter h

Antoinette

QUEEN'S SIGNATURE

Marie Antoinette (1755-1793), the wife of Louis XVI of France, was executed during the French Revolution. By studying many examples of her signature and her handwriting a graphologist may be able to tell what sort of person she was



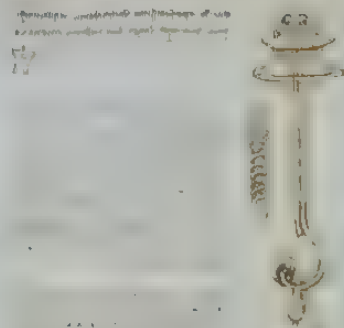
18th-century inkstand

Handwriting

LIKE A FINGERPRINT, everyone's handwriting is unique. No two people write in exactly the same way, even if they were taught to write by the same teacher. As people grow up, their handwriting changes and matures, and they can learn to write in a different style if they want to. This makes it difficult for one person to imitate another's writing accurately. The way you write also depends on the materials you use as well as on the purpose of the writing. A scribbled shopping list, a school composition, and a formal letter written by the same person will look very different. Different writing styles have also been used in different periods. Analyzing handwriting for what it reveals about a person's character is called graphology.

ROYAL FLOURISH

Elizabeth I of England (1533-1603) had an impressive signature with many cross-strokes and flourishes. It could be the reflection of a vain person or it could be an attempt to prevent anyone from forging her signature. Here she has not left enough room for all her name and has had to put the last letter on the line above.



George Washington

MIRROR WRITING

One way to make it difficult for others to read your handwriting is to write in reverse. Leonardo da Vinci (1452-1519), the Italian artist and inventor, made notes on his scientific experiments in mirror writing like this.

Washingt

PRESIDENTIAL HANDWRITING

George Washington (1732-1799) was the first president of the United States. His signature has many flourishes and looks quite impressive. People in public life may have two different signatures, one for official papers and one for private letters.

*Napoleon's
handwriting*

LOST LETTER

COST LETTER
This letter was written by Napoleon Bonaparte (1769-1821) to his brother Joseph in 1798 but was never delivered. The courier who was carrying it was intercepted and the letter was found by English admiral Lord Nelson, who added a note. In the 19th century letters were not put into envelopes but were folded and sealed with wax.



FINE WRITING.

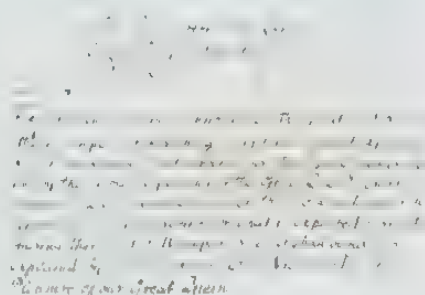
Calligraphers (pp. 6-7) produce handwriting that is also art. This is a piece of 19th-century calligraphy from Iran. The writing is on marbled paper.

MASTER'S ROLL

In the 16th and 17th centuries there was great interest in developing elegant handwriting, and there were many famous writing masters. This is a Russian writing master's roll showing Cyrillic script in a style with many flourishes.



Napoleon Bonaparte

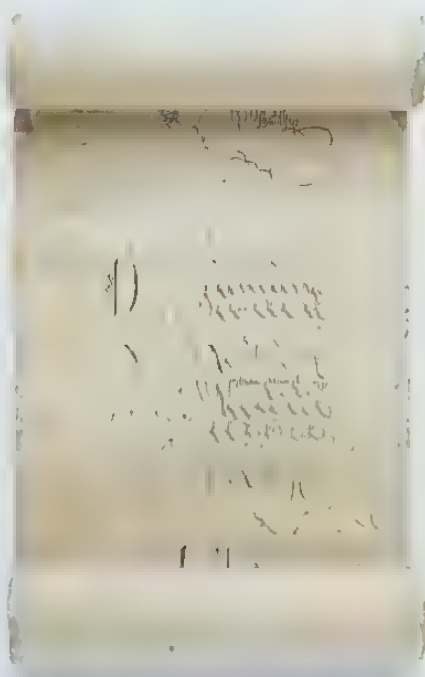
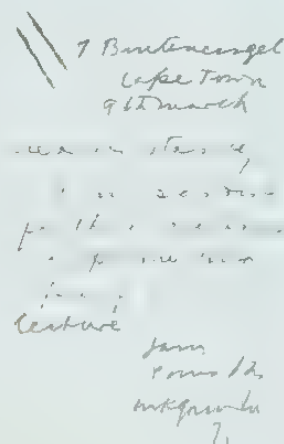


It is desired that our Brother under may receive
the same.



ANIMAL MARKS

A signature is a way of identifying yourself and showing agreement. These 19th century native North American signatures take the form of drawings of animals.



Wax seal

Lord Nelson's
handwriting

Steel
ribbed
pen

Quill
pen

GANDHI

Old letters can turn out to be very valuable, especially if they were written by someone who later became famous. The Indian leader Mahatma Gandhi (1869–1948) wrote this note in 1914 while in South Africa.

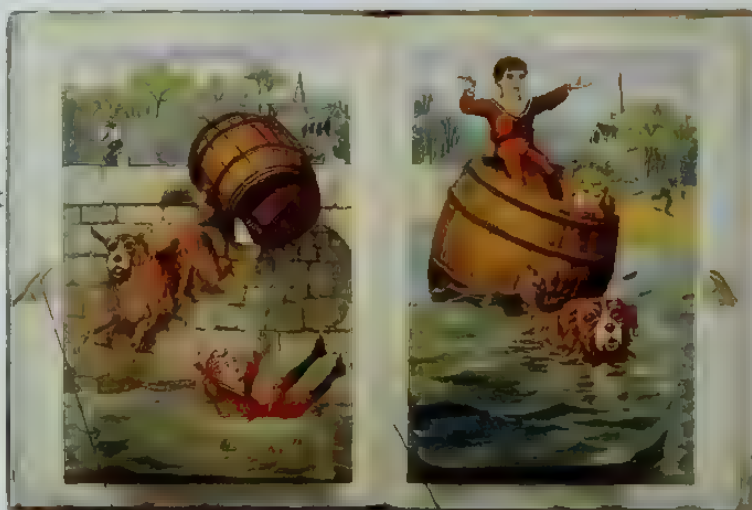
NIRS

Steel nibs took over from the quill pen in the 19th century, but both were slow to write with as they had to be dipped into ink every few words. The fountain pen—designed for writing—it holds a supply of ink in its reservoir and allows just enough to flow down to the nib.

Fontana n. per

Children's books

TODAY, CHILDREN HAVE a huge choice of books to read for pleasure, but this has not always been the case. For hundreds of years there were no books written specially for children, who, if they could read at all, had to make do with books written for adults. Later there were school books to teach grammar and spelling, and moral tales to teach them how to behave properly. About 250 years ago publishers began to produce alphabet books, rhymes, and fairy tales for children, and gradually this led to adventure stories, animal stories, and the other kinds of children's books we have today.

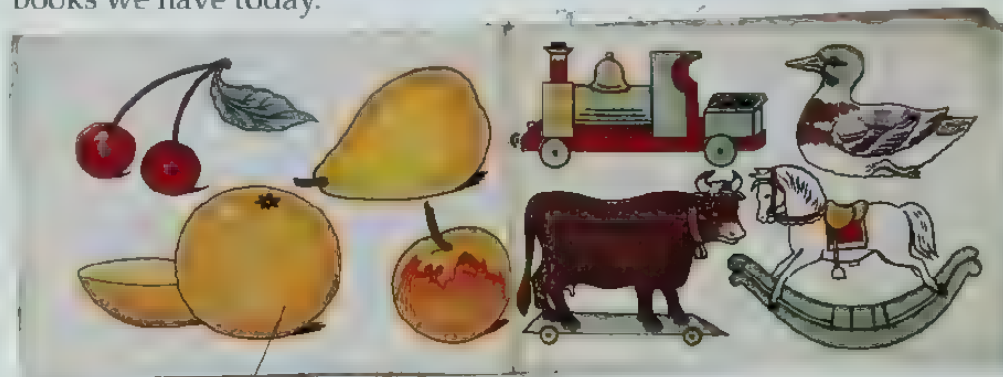


The barrel

Strings to hold moving parts together

MOVING PICTURES

Books with pictures that move and change are always popular. In this tale of an old sugar tub the picture stands out from the page as you open the book, and the dog appears to swim toward you.



Pictures printed on cloth

Pop-up letter W

CLOTH BOOK

Books for very small children are sometimes printed on cloth rather than paper, because cloth is much stronger. This one shows a selection of everyday objects that the child can recognize.

POP-UP

When you open this book flat on a table, the letters and objects spring up off the page and stand up straight. The book shows the letter of the alphabet and how to write it as a capital and a small letter. Movable letters first appeared in the 15th century. This type of pop-up book was very popular about



THE REAL ALICE
At the end of the manuscript of *Alice's Adventures in Wonderland*, Lewis Carroll included a picture of Alice Liddell, the little girl who had inspired him. She was associated with the book throughout her life.



ALICE AND THE DODO

Lewis Carroll did not think that his own drawings were good enough to be used when the story was published in 1865. Instead, the cartoonist John Tenniel was asked to illustrate the work. Here is his idea of what the Dodo looked like.



DANCERS

Children in European countries could read about Alice's adventures in their own language soon after children in England. Here a Dutch Alice is watching the Gryphon and the Mock Turtle dance the Lobster Quadrille.



WHITE RABBIT

Many different artists since Tenniel have illustrated the Alice stories. Here a fashionable Alice from the 1920s meets the elegant White Rabbit, who is so startled by her that he drops his gloves and fan.



ALICE IN WONDERLAND

Alice's Adventures in Wonderland began its life as a story told by Lewis Carroll (1832-1898), a young Oxford University professor, to some children on a river trip in 1862. Later he wrote it out neatly with drawings as a present for one of the children, Alice Liddell. The original manuscript is now kept in the British Library, London.

ALICE AND THE MOUSE

Nearly everyone's idea of Alice is a little girl with long blond hair, but sometimes she is shown looking more like the real Alice Liddell, who had short, dark hair with bangs.

THE CHESHIRE CAT

Lewis Carroll's animals are a mixture of his vivid imagination and the features of his friends. Alice looks puzzled by a cat that grins at her from a tree.

AN NEW NAME

Alice's Adventures in Wonderland has been translated into more than 100 languages. Every language includes the invented language Esperanto. There is even a hitherto version. This Alice from an edition in the African language wabuli in which she

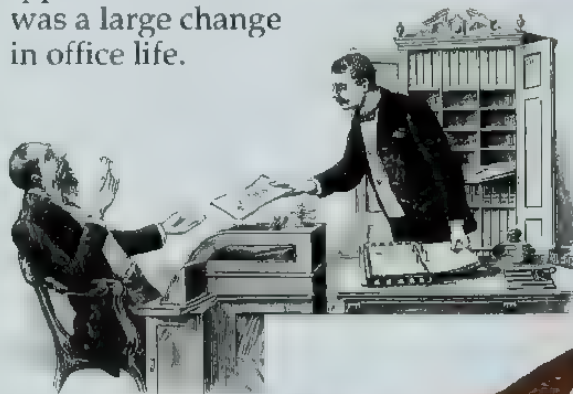
Words at work



THE FIRST WRITING was probably used for accounting and record-keeping (pp. 8–9), and writing has been vital in all sorts of workplaces ever since. The first merchants needed lists of their goods and accounts of their business deals; governments needed

to keep records of where people lived and what they owned, so that they could collect taxes. People who could read and write were therefore important and valued members of society, particularly because few had these skills before the 19th century. By that time, with the huge growth of industry and the rise in population, armies of clerks were employed to write everything down by hand.

With the advent of the typewriter (pp. 58–59), there was a large change in office life.



AT THE OFFICE

This office is typical of the late 19th century. The clerk, who has a pen tucked behind his ear so that he does not mislay it, keeps all the correspondence in files in a cupboard. On his desk are his writing tools. Today, paper files are being replaced by records kept on a computer.

ORGANIZER

Office workers are always looking for ways of keeping their desks tidy and well organized.

Wooden organizers like this one were popular in the early 20th century for organizing letters and stationery.



FALSE FEATHER

Medieval scribes wrote with a quill pen made from a hardened feather of a large bird. Metal nibs came into common use in the 1830s. This metal pen is an imitation of a quill pen.



KEEPING IT CLEAN

A blotter was essential for preventing smudges of ink on the paper. In this example, the blotting paper is stretched around the curved surface of the blotter. The writer gently rocks the blotter back and forth over the wet ink.



SCRIVENERS' KNIVES

Scribes needed knives, like these two from the 17th century, for cutting pieces of parchment or paper and for preparing quills. To make a quill, the scribe had to trim away part of the feather to make a shaft that was comfortable to hold. Then the tip of the feather was cut to the scribe's preferred shape and a slit was made, so that the pen would hold the ink.

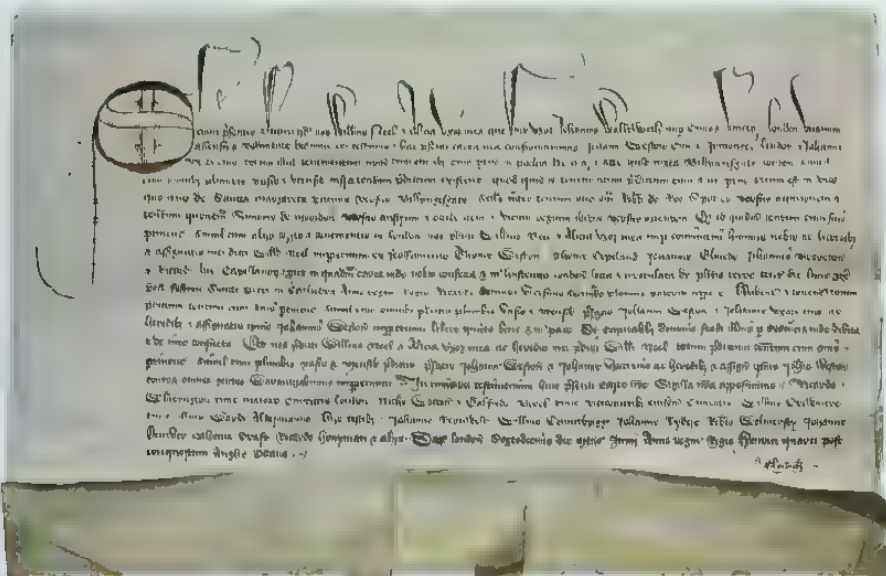


OPENING UP

Envelopes for letters were introduced in the 19th century. Today a busy office receives hundreds of letters every day. The easiest way to open them is to slit the top with a paper knife. Many paper knives have elaborately decorated ends.

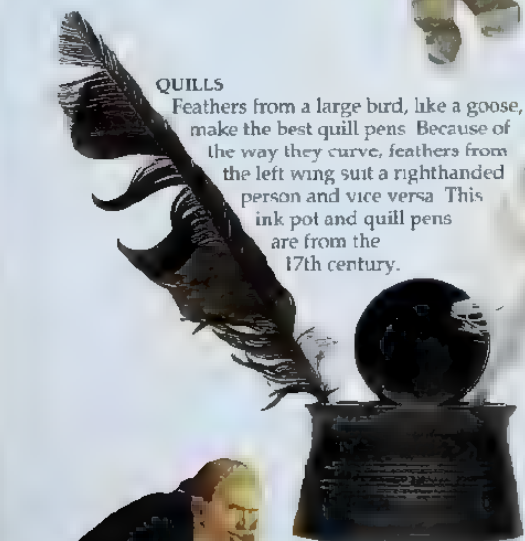
Early 20th-century ink bottle





SIGNED AND SEALED

In the 15th century, a business agreement looked like this. It was written out by hand and sealed with wax to show that all parties agreed. This document records the transfer of a shop and all its contents from one trader to another in 1407.



QUILLS

Feathers from a large bird, like a goose, make the best quill pens. Because of the way they curve, feathers from the left wing suit a righthanded person and vice versa. This ink pot and quill pens are from the 17th century.

Wax seal

Goose-feather quill



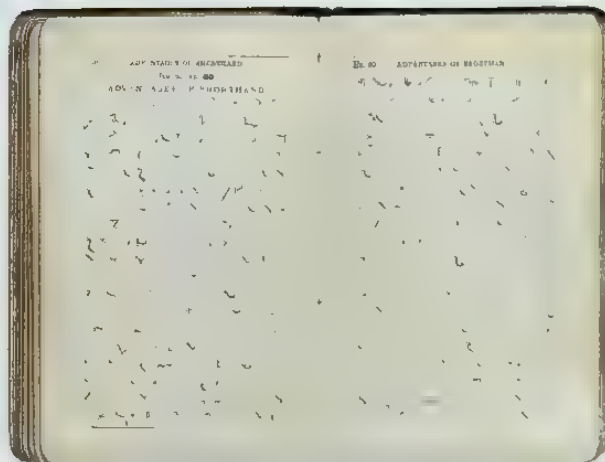
A HIGH PERCH

In the 19th century, clerks usually sat on tall stools and worked at sloping desks like this. The slope was supposed to make writing easier, but the slouching posture of this clerk makes it look rather uncomfortable.



ON THE RECORD

Record keeping has always been one of the most important uses of writing at work. This 19th-century view shows part of Somerset House, London, a large building which housed the British records of births, marriages, and deaths. Today, records of this type can be kept on computer, where they take up much less space.



RAPID WRITING

Shorthand is a way of writing very quickly using symbols or abbreviations instead of the usual letters of the alphabet. The ancient Greeks and Romans developed a kind of shorthand, but it did not last. In 1837 Isaac Pitman invented this system, which uses dots, dashes, and straight and curved lines. It is still widely used, especially for dictated letters.



EMBOSSE

This device provides a way of stamping a name or address onto paper or business cards. A sheet of paper is inserted, and when you pull the handle, the machine embosses the words on to the paper so that they stand up.

The typewriter



SEVERAL INVENTORS experimented with "writing machines" of various kinds before William Austin Burt, an American, produced the first typewriter – made entirely of wood – in 1829. The writing machines were often slower than writing by hand, but in 1867 another American, Christopher Latham Scholes, produced the first efficient machine. Typewriters were slow to catch on in offices because clerks were cheap to employ and produced neat handwritten documents. But eventually typewriters became standard office equipment and replaced clerks altogether. The first typewriters were large and heavy, with hundreds of moving parts. In the early 20th century an electric typewriter was developed; it took the hard work out of typing. Portable typewriters meant that journalists covering a major story could type it up right away. Today the typewriter is being replaced by the word processor.

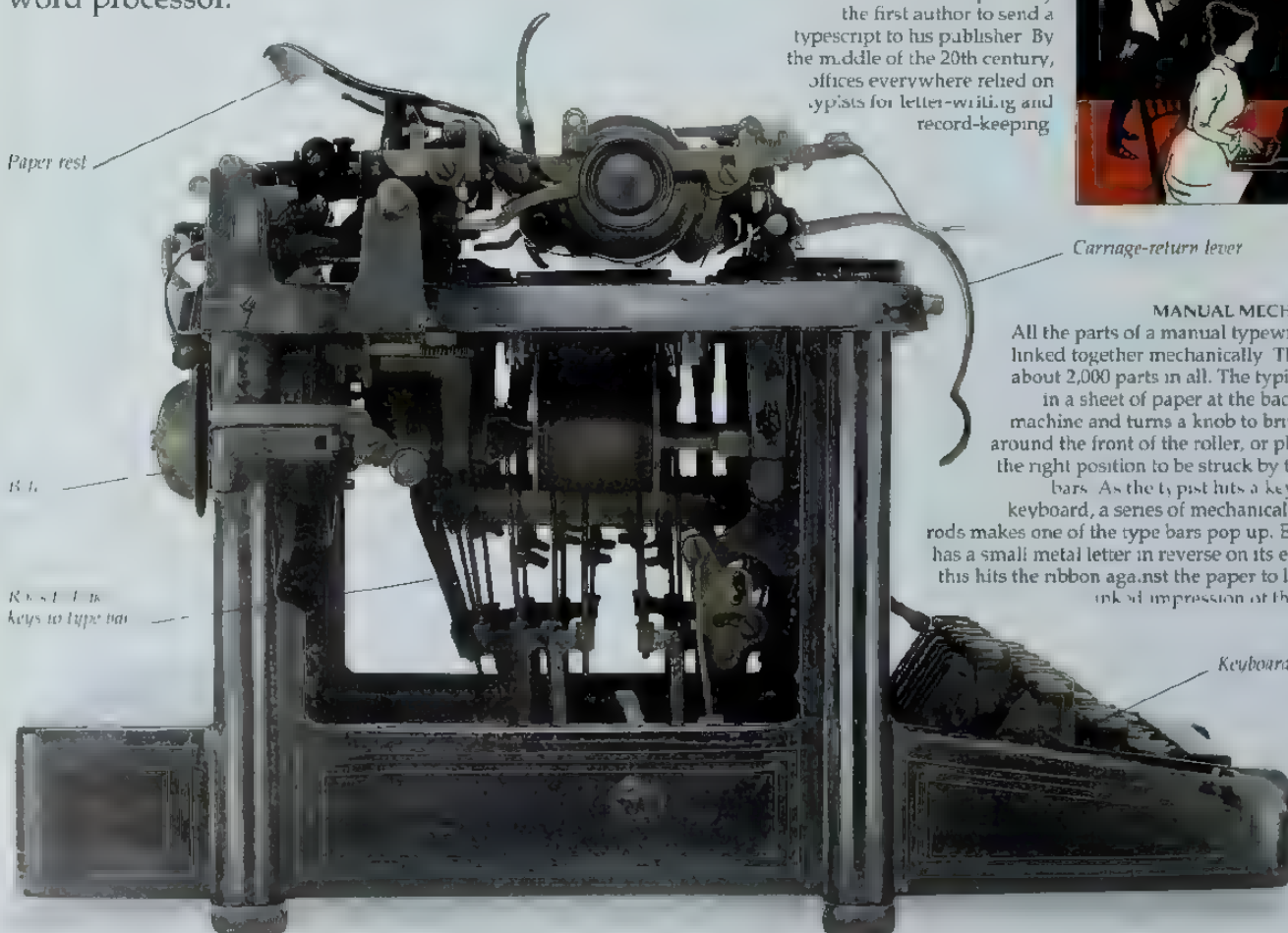


STANDARD MODEL

The first commercially produced typewriter in the world was sold by the Remington Company in 1873. By the early 20th century the Remington standard looked like this, a heavy, solidly built machine that was found in hundreds of offices all over the world.

TYPISTS

Typing is a very useful skill for all kinds of work. The American writer Mark Twain (1835–1910) was probably the first author to send a typescript to his publisher. By the middle of the 20th century, offices everywhere relied on typists for letter-writing and record-keeping.



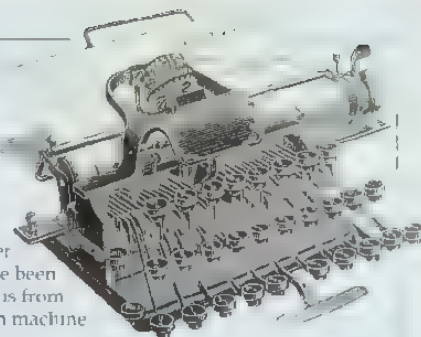
MANUAL MECHANISM

All the parts of a manual typewriter are linked together mechanically. There are about 2,000 parts in all. The typist feeds in a sheet of paper at the back of the machine and turns a knob to bring it up around the front of the roller, or platen, to the right position to be struck by the type bars. As the typist hits a key on the keyboard, a series of mechanical linking rods makes one of the type bars pop up. Each bar has a small metal letter in reverse on its end, and this hits the ribbon against the paper to leave an inked impression of the letter.

WARNING BELL
As the typist approaches the end of a line, a bell sounds to indicate that there are only a few spaces left on the line.



ANOTHER LAYOUT
Typewriters in many countries use the QWERTY keyboard layout, but numerous other keyboards have been tried. This one is from an early French machine



ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz

```

EEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE
WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW
      LOCAL SPACES

```

Unlike type for printing, where individual letters have different widths, all the letters on a typewriter occupy the same space. On a manual typewriter, the appearance of the letters is affected by how heavily you strike the keys, which can give an uneven look to the typing.

Remington

Paper gauri

Type bars

These keys give QWERTY keyboard its name.

CARRIAGE RETURNS

The carriage moves along with each stroke of a key. At the end of the line the typist must pull the carriage-return lever to move the paper up and the carriage back before typing the next line. The carriage moves in the same direction as the direction of handwriting, so in a Hebrew or Arabic typewriter it moves from right to left.

KEYWORDS

The authors

NOTES

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The book market

BOOKS ARE BIG BUSINESS and always have been. In the Middle Ages monks were so keen to get hold of manuscripts to copy that they even borrowed them from foreign monasteries. Once printing was established in Europe, the real trade in books began with printers selling their own books. Later on printers usually worked for a publisher, who distributed books to bookshops, which in turn sold them to the customer. Today, books are sold everywhere from airports to supermarkets. The best-selling book ever is probably the Bible, which has been published in over 800 languages. William Shakespeare is probably the world's best-selling author.



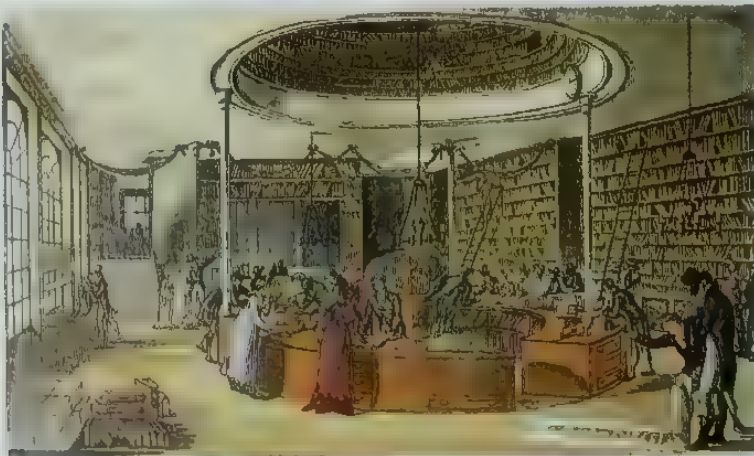
MEDIEVAL BOOKSHOP

When all books had to be written by hand, it was not possible just to go into a bookshop, pick a book off the shelf to buy, and take it home to read. Students had to pay to borrow books from the university bookshop to copy out for themselves.



TRAVELING SALESMAN

By the 15th century, there were bookstores – often run by printers – in the big towns. ABCs and religious books for the ordinary people were sold by hawkers who went from place to place selling their wares.



TEMPLE OF THE MUSES

James Lackington made a fortune selling books at very low prices in his London shop in the 18th century. He was probably the first person to sell remainders – books that are flops and do not sell at full price.

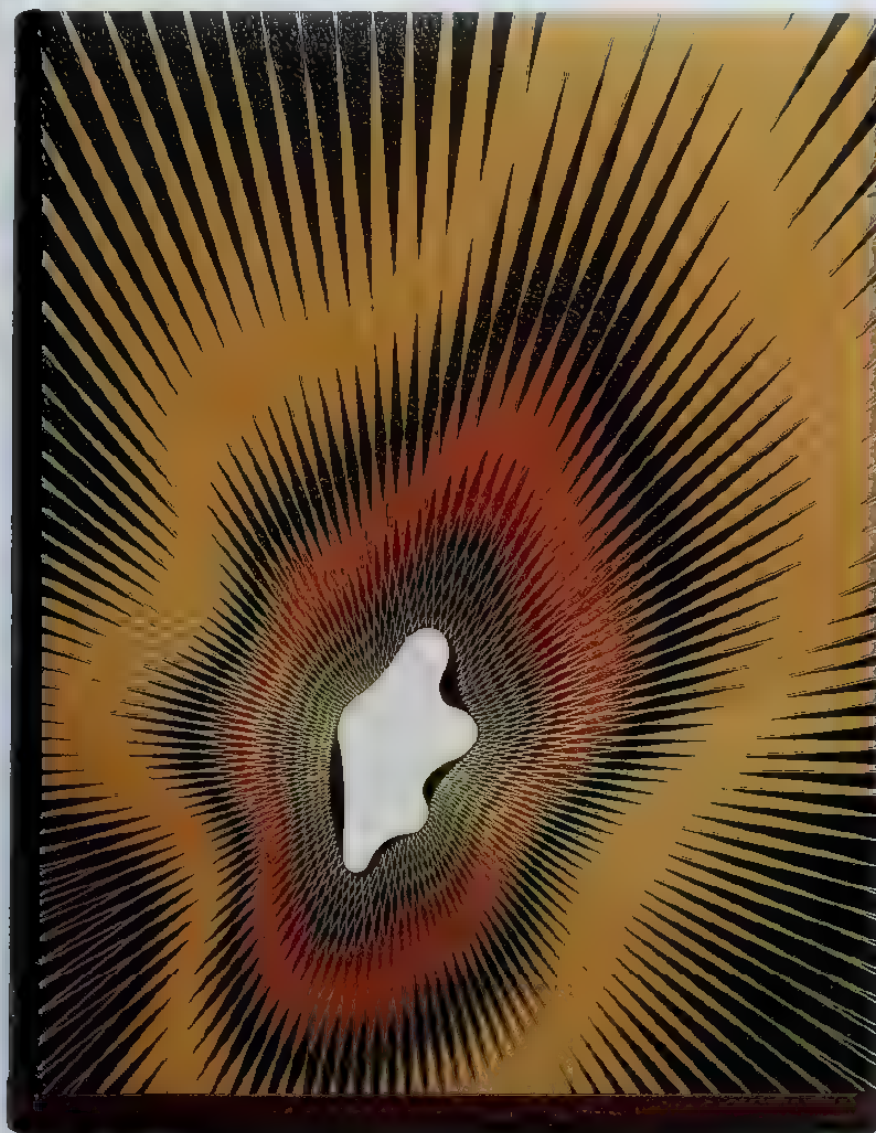
LARGE AND SMALL

Bookstores come in all shapes and sizes, from the grand to the tiny and cramped, like this 18th-century one with books piled high everywhere



STORES OF ALL TYPES

Some bookstores specialize in just one subject – this one sold only poetry books. Others are proud of being able to get any book currently in print within a day or two. There is also a big trade in second-hand books, especially among book collectors. Very rare old books are sold at special auctions and can command high prices.



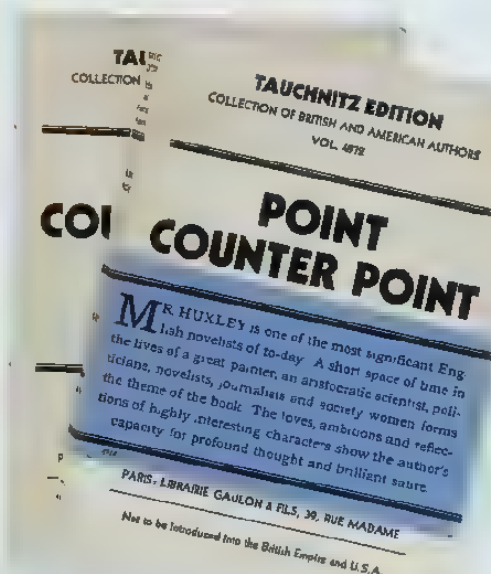
Gold
leaf

Leather



THE ROLE OF THE PUBLISHER

Publishers are a powerful link in the book chain, they decide which books to publish and how much they should cost. The publisher can be recognized by a logo like this which appears on the jackets and spines.



BOOK SMUGGLERS

Publishing is an international business. The German firm of Tauchnitz published more than 6,500 books by British and American authors and sold more than 40 million copies worldwide. For copyright reasons it was illegal to bring these cheap English-language editions into Britain, but many travelers hid them in

the linings of their coats and staggered past customs weighed down by all their books

FINE BINDING

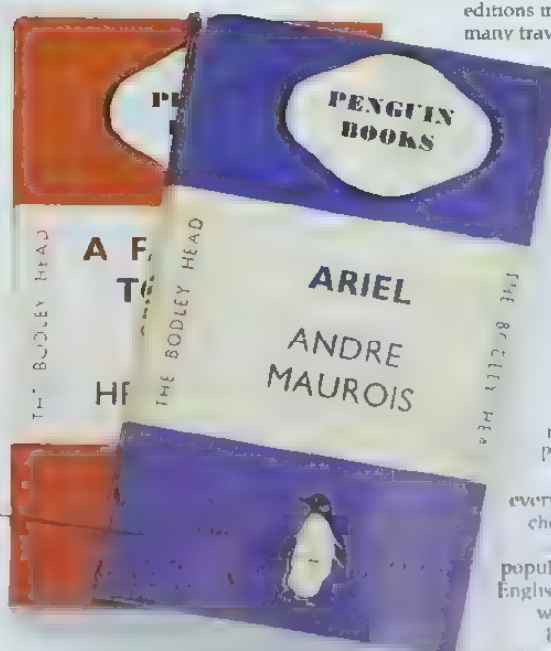
Originally books were sold unbound. After you had bought a book, you went to a bookbinder and ordered a binding to suit your taste and pocket. Today most books are either machine-bound hardcovers or paperbacks. Bookbinders do still make individual bindings for fine books, like this volume of French poetry. However, such books are often collected as objects to be admired rather than books to be read.



Publisher's
logo

ON BOARD

Traveling bookselling went on into the 20th century in many countries, with vans like this going out from major cities into the Italian countryside.



PAPERBACKS

About one-third of all books sold today are paperbacks. They are often so popular that they have to be reprinted many times. Paperbacks have made books available

everyone because they are cheap and handy. The

popular paperbacks sold in English speaking countries which first appeared in 1935. Paperbacks soon followed in other countries.



Keeping your words

THE FIRST LIBRARIES were great storehouses in Babylonia and ancient Egypt that contained records written on clay tablets or papyrus rolls. In the Middle Ages, when books were rare and precious, a book chest or a cupboard was often large enough to contain a collection of books. Only the libraries of big churches and universities had more than a few hundred volumes. Even after printing made books more widely available and more people learned to read, libraries were still open only to the rich. By the 18th century there were libraries in Europe that people could pay to use, but not until the 20th century was there a free public library service in most countries.



ALEXANDRIA

One of the most famous libraries of the ancient world was at Alexandria in Egypt. Scholars and scientists came from all over the Greek speaking world to study there and to add to the library's collections by translating and copying more texts. At one time it is said to have contained more than 400 000 works on papyrus rolls stored on shelves, each with a label to identify it.



Theology and philosophy

Small book bound in parchment



Ribbon to keep book closed

Catalog of the books

Poetry

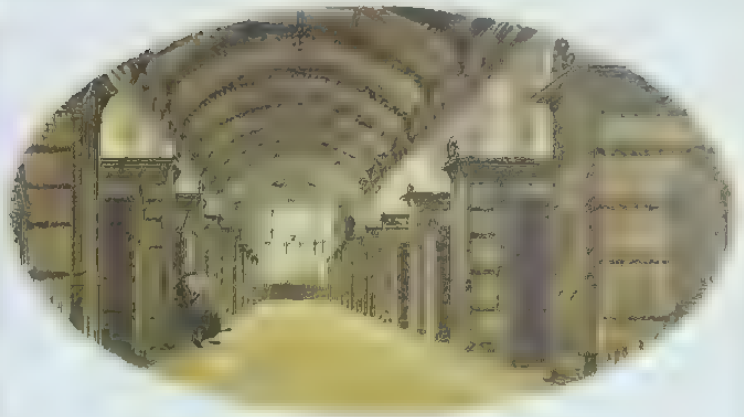
TRAVELING LIBRARY

Sir Julius Caesar, a 16th-century English judge, owned this unusual traveling library of 44 small books, each bound in parchment with gold tooling. Books on theology and philosophy are on the top shelf, history is in the middle; poetry is on the bottom shelf. The outside of the box is covered in leather to make it look like a book.



CHAINED UP

Books are portable and often disappear from libraries. To prevent this from happening in the medieval library at Hereford Cathedral in England, the books were chained to a rod along the bookcase. The chains were attached to the front covers, so the books were shelved with their spines to the back.



SILENCE, PLEASE

A library is an essential part of every school and university. In the past no talking was allowed in the library so that students could concentrate on their books. Nowadays a school library will be alive with the hum of computers and children working together on projects.



PAY AS YOU READ

Before public libraries existed, people had to pay to borrow books from a private library. There were libraries for gentlemen in the 18th century and subscription libraries in the 19th century. Private libraries were especially popular in seaside and spa towns, where visitors had free time for reading. This one was at Margate on the English coast.

READING HABITS

At the beginning of the 20th century reading was the most popular source of entertainment, but today reading is a less popular hobby than watching television. Libraries have had to change to meet people's needs, so they now stock records, tapes, and even videos as well as books.



BOOKS ON WHEELS

A mobile library brings books to people who live too far from town to visit the library. In the 19th century, working people could get books from this kind of horse-drawn mobile library.

NATIONAL STOREHOUSE

The British Library in London is one of the world's largest libraries. It contains not just books and manuscripts but also newspapers, maps, music, sound recordings, and stamps. The books alone cover more than 200 miles (332 km) of shelves, mostly in the form of book stacks to which readers are not admitted: if you want a book, it is brought from the stack to a desk in a reading room. By law the Library receives a copy of every new book published in Britain.



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中華民國二十九年四月

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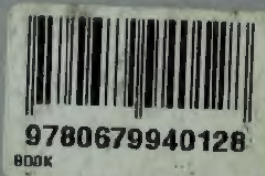
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